

## **Printed Documentation**

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## Table Of Contents

HUB 4000 Q.....	1
General - AKG HUB 4000 Q.....	1
Product Panel - HUB 4000 Q .....	2
Master Control Panel - HUB 4000 Q .....	3
Offline .....	5
Stripe .....	14
Device Manager .....	28
Auto Setup.....	38
RF Monitor - HUB 4000 Q .....	45
Country Selection - HUB 4000 Q.....	47
About Dialog - HUB 4000 Q .....	48
Device Info Dialog - HUB 4000 Q .....	49
Saving & Loading - HUB 4000 Q.....	50
Locate - HUB 4000 Q .....	50
Menus - HUB 4000 Q .....	51
Short Cuts - HUB 4000 Q .....	53
Unsupported Features - HUB 4000 Q .....	54
AKG RF basics.....	55
AKG Frequency Management .....	58





# AKG

## HUB 4000 Q

### GENERAL - AKG HUB 4000 Q

The AKG HUB 4000 Q integrates AKG wireless systems seamlessly into HiQnet™ systems and lets the user control and monitor the AKG wireless system from the System Architect™ software.

**The AKG HiQnet plug-in is the perfect tool for monitoring, controlling and setting up wireless systems.**

#### Overview:

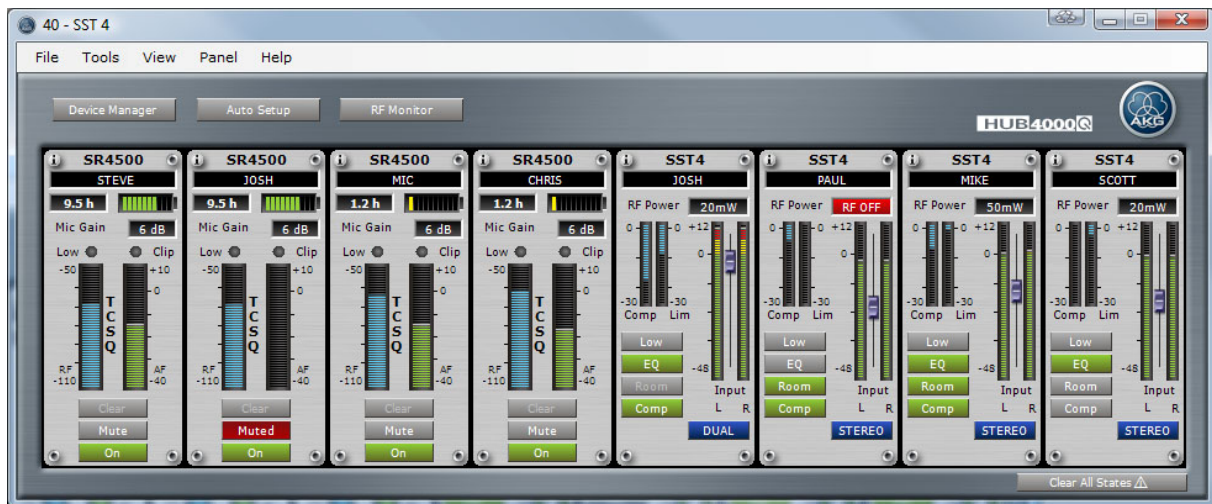
- [Product Panel](#) for controlling and monitoring a **single** HUB 4000 Q
- [Master Control Panel](#) for controlling and monitoring **multiple** HUB 4000 Qs
- [Device Manager](#) for setting up the **Frequency Management**
- [Environment Scan](#) for scanning the RF environment
- [Auto Setup](#) of **Frequency Management**
- [RF Monitor](#) for checking the **RF link**
- [Offline](#) configuration of the wireless system

The HUB 4000 Q enables the user to connect up to eight AKG Devices (SR 4000/4500, SST 4) to a HiQnet™ system. Being a true plug and play device, all you need to do is to install the HUB 4000 Q and connect it directly to your PC via a commercial crossover network cable (CAT 5) and to connect the AKG Devices with RJ11 cables to the slots of the HUB 4000 Q. For a large HiQnet™ system, you can connect several HUB 4000 Qs using standard Ethernet components like Ethernet switches and routers which allow you to configure and monitor the entire system from a single computer. The System Architect™ software will automatically identify all HUB 4000 Qs connected to the computer.

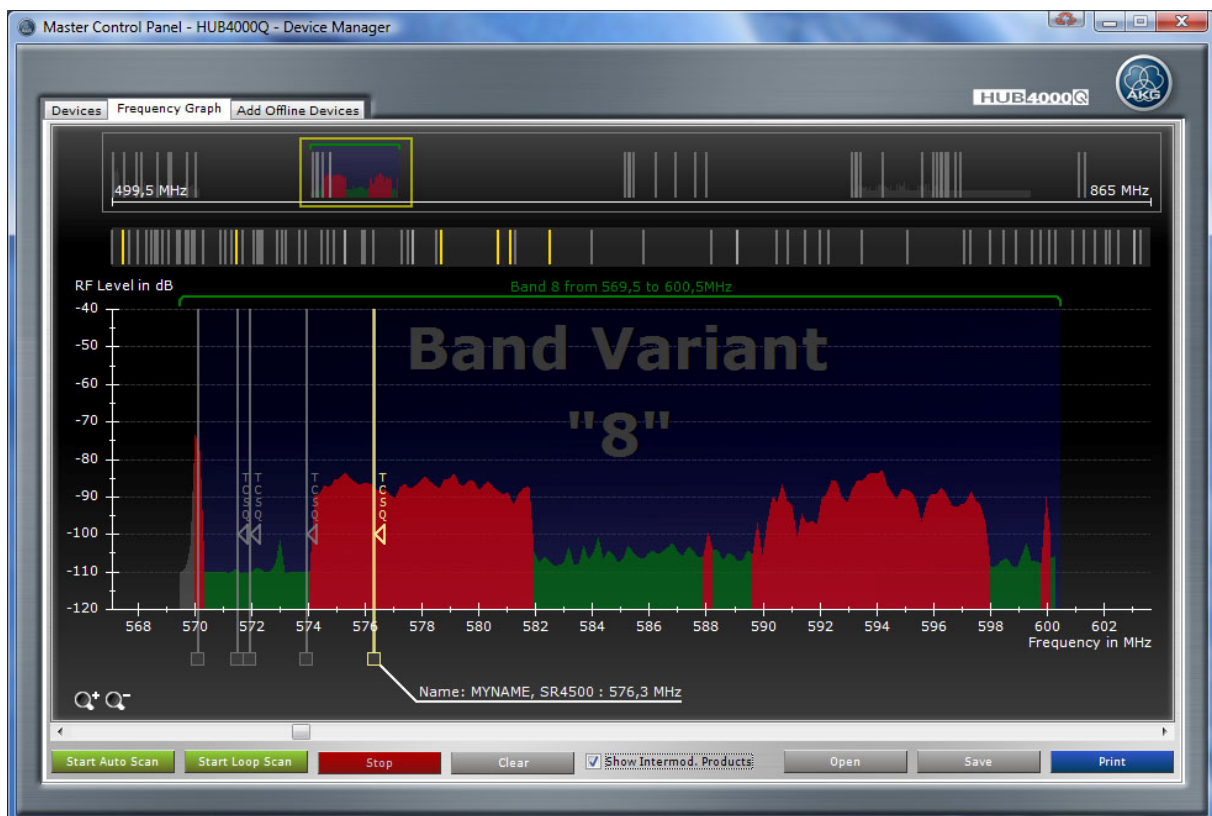
The HUB 4000 Q quickly and easily integrates the [WMS 4000/4500](#) wireless microphone and [IVM 4](#) monitoring system into any complex HiQnet™ environment.

AKG homepage: [www.akg.com](http://www.akg.com)

AKG HiQnet support: [hiqnet@akg.com](mailto:hiqnet@akg.com)



**Figure:** HUB 4000 Q [Product Panel](#) with [SR 4500](#) and [SST 4](#) Stripes



**Figure:** [Device Manager](#) - [Frequency Graph](#) ([Environment Scan](#))

## PRODUCT PANEL - HUB 4000 Q

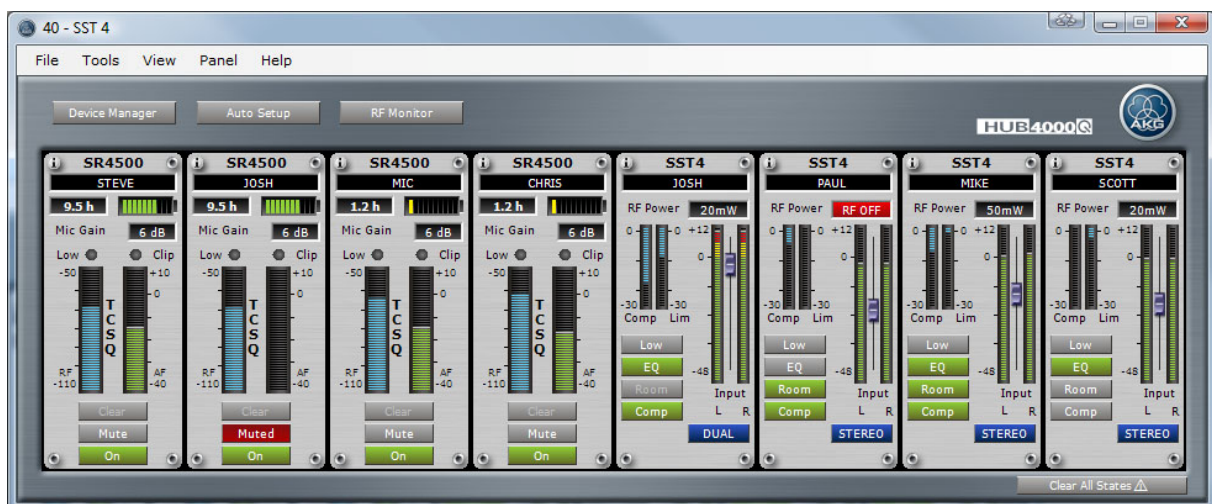
The AKG designed [Stripe](#) oriented plug-in provides intuitive, control and monitoring and makes setting up wireless systems easy by using the [Device Manager](#) ([Environment Scan](#), [Auto Setup](#)), [RF Monitor](#) and many other functions.

**A Stripe is the software representation of an physical AKG Device like the SR 4000/4500 or the SST 4.**

The HUB 4000 Q has eight slots which the user can connect AKG Devices to. Each slot has a dedicated [Stripe](#) on the Product Panel. For example, the first slot at the HUB 4000 Q is dedicated to the first Stripe on the HUB 4000 Q Product Panel.

**The Product Panel is the perfect tool to monitor, control and setup wireless systems consisting of one HUB 4000 Q.**

The user can open the Product Panel with a double click on the HUB 4000 Q icon at the System Architect Venue View.



**Figure:** HUB 4000 Q [Product Panel](#) with [SR 4500](#) and [SST 4](#) Stripes

- **Device Manager Button:** Opens the [Device Manager](#) for setting up the Frequency Management with performing an [Environment Scan](#).
- **Auto Setup Button:** Opens the [Auto Setup](#) for setting up the Frequency Management automatically within 2 minutes (only available if HUB 4000 Q is online).
- **RF Monitor Button:** Opens the [RF Monitor](#) (Radio Frequency Monitor) to get more detailed information about the RF connection (only available if HUB 4000 Q is online and at least one online SR 4000/4500 is connected to the HUB 4000 Q).
- **Clear All States Button:** Clears all states of all SR 4000/4500s and resets all RF Low and AF Clip LEDs of the [SR 4000/4500 Stripes](#) at the wireless system. This is supported only in the SR 4000 Firmware Version 1.22 (See [Unsupported Features](#)).

## MASTER CONTROL PANEL - HUB 4000 Q

The AKG designed [Stripe](#) oriented plug-in provides intuitive, control and monitoring and makes setting up wireless systems easy by using the [Device Manager](#) ([Environment Scan](#), [Auto Setup](#)), [RF Monitor](#) and many other functions.

**A Stripe is the software representation of an physical AKG Device like the SR 4000/4500 or the SST 4.**

With the Master Control Panel, multiple HUB 4000 Qs can be grouped together to build large wireless systems.

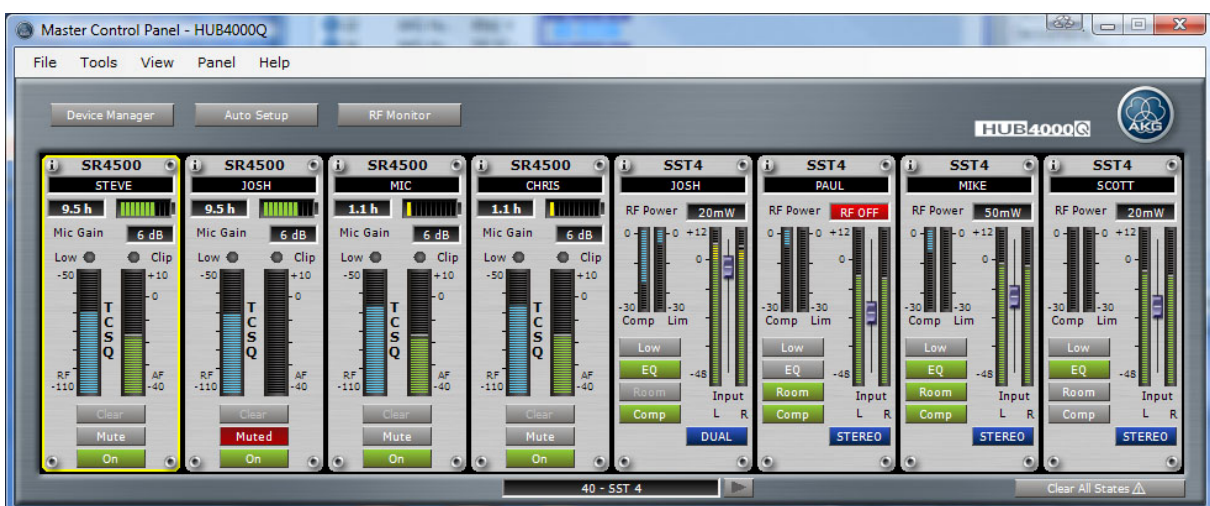
**The Master Control Panel is the perfect tool to monitor, control and setup wireless systems consisting of multiple HUB 4000 Q.**

The Master Control Panel has several advantages:

- The user can monitor multiple HUB 4000 Qs at once
- With [Device Manager](#) the user can setup the [Frequency Management](#) for the entire wireless system consisting of multiple HUB 4000 Qs
- [Auto Setup](#) can be done for the wireless system for setting up the wireless system automatically

To build a Master Control Panel the user has to select multiple HUB 4000 Q icons on the Venue View, right click on the selected HUB 4000 Qs and select *Create Master Control Panel - AKG Hub4000Q* from the context menu. All selected HUB 4000 Qs are then added to the Master Control Panel.

In general the Master Control Panel looks and behaves like the [Product Panel](#) with some additional features. It has the same [Stripe](#) oriented user interface, tools and features. Additionally the Master Control Panel gives the user access to all Stripes of all HUB 4000 Q attached to the Master Control Panel. At the Master Control Panel only one HUB 4000 Q and its connected AKG Devices is shown at one time. At the bottom of the Master Control Panel the user finds a label which shows the name of the actually displayed HUB 4000 Q. With the arrows left and right of the label user can switch to the previous or next HUB 4000 Q.



**Figure:** HUB 4000 Q Master Control Panel

- **Device Manager Button:** Opens the [Device Manager](#) for setting up the [Frequency Management](#) with performing an [Environment Scan](#).



- **Auto Setup Button:** Opens the [Auto Setup](#) for setting up the Frequency Management automatically within 2 minutes (only available if at least one HUB 4000 Q is online).
- **RF Monitor Button:** Opens the [RF Monitor](#) (Radio Frequency Monitor) to get more detailed information about the RF connection (only available if at least one HUB 4000 Q is online and one online SR 4000/4500 is connected to the HUB 4000 Q).
- **Previous Node Button:** Switches to the previous HUB 4000 Q which is attached to the Master Control Panel.
- **Next Node Button:** Switches to the next available HUB 4000 Q which is attached to the Master Control Panel.
- **Node Label:** Gives the user information about the actual displayed node ("1 1 - 4500 VIP" – node address and node name)
- **Clear All States Button:** Clears all states of all SR 4000/4500s and resets all RF Low and AF Clip LEDs of the [SR 4000/4500 Stripes](#) at the wireless system. This is supported only in SR 4000 Firmware Version 1.22 (See [Unsupported Features](#))

## OFFLINE

### Offline HUB 4000 Q - HUB 4000 Q

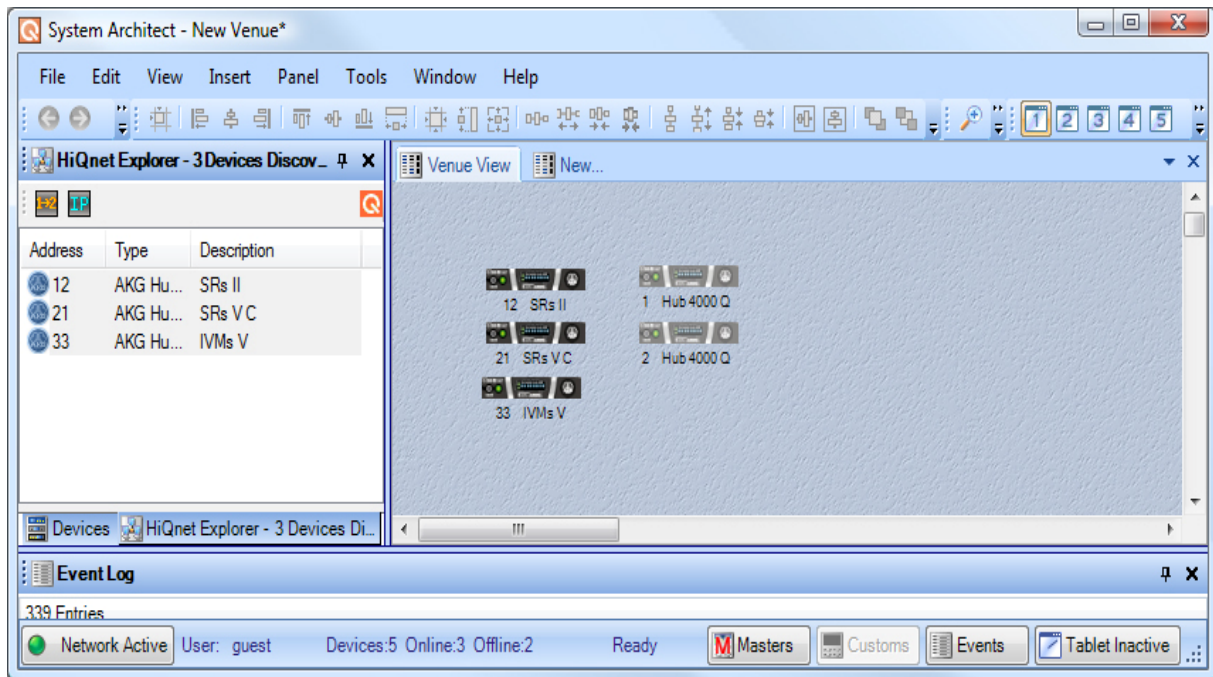
**Offline HUB 4000 Qs** are devices which have **NO physical representation or NO HiQnet network connection**. This is the case if a HUB 4000 Q was added to the venue view but has no connection to a hardware HUB 4000 Q because there is no HUB 4000 Q with the given HiQnet address or System Architect is not connected to a HiQnet network. **This offline HUB 4000 Q exists only at System Architect.**

This offline HUB 4000 Q can be configured and controlled like an online HUB 4000 Q. An offline HUB 4000 Q doesn't receive meter values because meter values are only received from online HUB 4000 Qs.

An offline HUB 4000 Q can turn online if System Architect gets connected to a HiQnet network and if in the HiQnet network a HUB 4000 Q exists with the same HiQnet address like the offline HUB 4000 Q. If that is the case, the **Sync Dialog** of System Architect opens up and the user must decide if the values of the offline HUB 4000 Q should be sent down to the hardware HUB 4000 Q or if the values of the hardware HUB 4000 Q should be sent up to System Architect HUB 4000 Q plug-in.

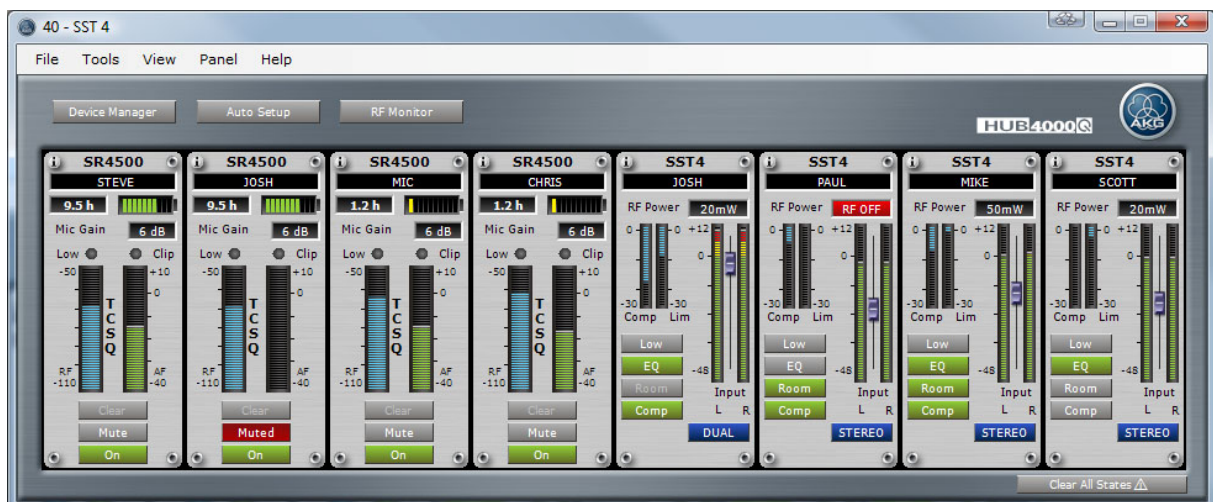
To add an offline HUB 4000 Q the user must simply drag and drop a HUB 4000 Q icon from the **Devices Toolbox** of the System Architect into the **Venue View** or insert a HUB 4000 Q with a right click into the venue view and choose *Insert Device – AKG – HUB 4000 Q* from the Context Menu. An online HUB 4000 Q gets offline if the System Architect loses network connection to this HUB 4000 Q.

User can easily identify an offline HUB 4000 Q with its **gray icon at venue view** or if the product panel is opened, with the [offline Stripes](#) background.



**Figure:** Venue View with 3 online and 2 offline HUB 4000 Qs

This is an online HUB 4000 Q with some [online Stripes](#).



**Figure:** Online HUB 4000 Q Product Panel with online Stripes

Furthermore it's possible that an online HUB 4000 Q has some [offline Stripes](#). This is the case if some of the Stripes have no physical representation in the online HUB 4000 Q.

**All Stripes of a HUB 4000 Q will appear offline in the Product Panel if the HUB 4000 Q is taken offline.**



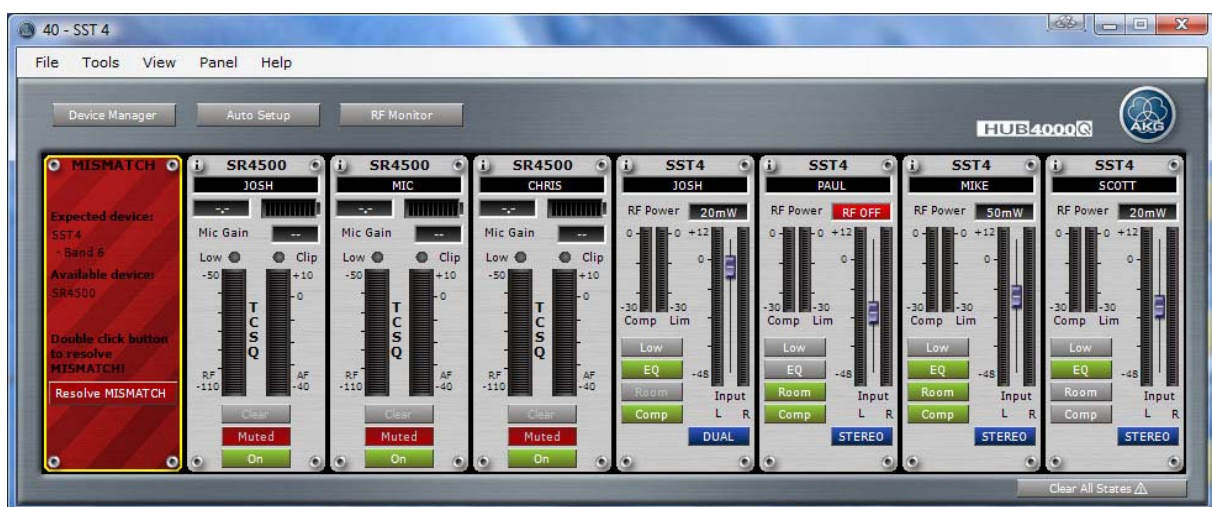
**Figure:** Offline HUB 4000 Q Product Panel with [offline Stripes](#)

If the HUB 4000 Q's status changes to online, Stripes which have matching hardware or physical representations will show as online.

Following parameters must match so that a Stripe comes online again:

- The **slot index** of the Stripe and the **slot** to which the physical AKG Device is connected to a HUB 4000 Q must be the same
- The **device type** (SR 4000/4500, SST 4, ...) must be the same at the Stripe and the physical AKG Device
- The [band variant](#) (I, II, III, IV, V, V-B, 5, 6, 7, 8...) at the Stripe and the physical AKG Device must be the same

If one of the three criteria is not fulfilled a [Mismatch](#) will occur and the Stripe (red background for indicating the Mismatch) will be displayed in Mismatch state. For resolving this Mismatch please refer to the [Mismatch](#) chapter.



**Figure:** HUB 4000 Q Product Panel with online and a [mismatching \(red\) Stripe\(s\)](#)

## Online / Offline Stripes - HUB 4000 Q

Offline [Stripes](#) exist only at the HUB 4000 Q System Architect plug-in.

These offline Stripes have **NO physical representation and NO physical AKG Device** is connected to the dedicated slot of the hardware HUB 4000 Q. Offline Stripes can exist in both online and offline HUB 4000 Qs.

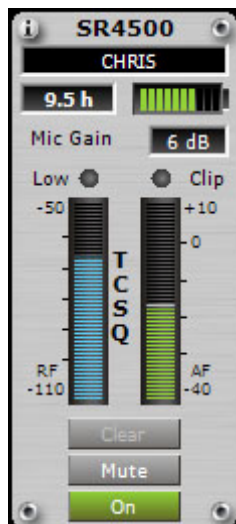
- **Offline HUB 4000 Q:**

At an [offline HUB 4000 Q](#) all Stripes are offline because the offline HUB 4000 Q has no connection to the HiQnet network.

- **Online HUB 4000 Q:**

There are **three possible states** of a Stripe at the System Architect plug-in if the dedicated HUB 4000 Q is online:

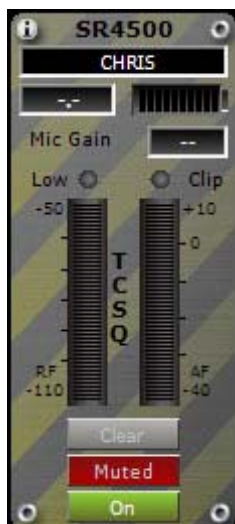
- **Online Stripe** which has a **physical AKG Device** connected to the dedicated slot at the Online HUB 4000 Q which [matches](#) exactly.



**Figure:** Online AKG Device = Online AKG Stripe

- **Offline Stripe** which has **NO physical AKG Device** connected to the dedicated slot at the Online HUB 4000 Q.





**Figure:** Offline AKG Device = Offline Stripe

- **Mismatching Stripe** if the **offline Stripe is NOT matching with the physical AKG Device (Mismatch)**. This can only happen if there is a physical AKG Device connected to the same slot at the online HUB 4000 Q.



**Figure:** Mismatching (red) Stripe: Offline AKG Device **IS NOT MATCHING** with physical AKG Device

Examples of states of a Stripe of an online HUB 4000 Q:

	Hardware configuration	System Architect plug-in configuration	Details	State of Stripe
1	Slot 1: SR 4000 - Band Variant II	Slot 1: SR 4000 - Band Variant II	same slot, same device type, same Band	<b>Online Stripe</b>

			Variant	
2	Slot 1: no AKG Device connected	Slot 1: SR 4000 - Band Variant V	Stripe is offline at SA	<b>Offline Stripe</b>
3	Slot 1: SR 4000 - <b>Band Variant IV</b>	Slot 1: SR 4000 - <b>Band Variant II</b>	same slot, same device type, <b>different Band Variant</b>	<b>Mismatching Stripe</b>

1. **Online Stripe:** At the physical HUB 4000 Q a **SR 4000 with Band Variant II** is connected to **slot 1**. At the System Architect plug-in of this HUB 4000 Q at **slot 1** there is configured a **SR 4000 Band Variant II**. Because the **slot (1)**, the **device type (SR 4000)** and the **Band Variant (II)** are equal at the plug-in Stripe and the physical AKG Device, the Stripe at the System Architect is **ONLINE**.
2. **Offline Stripe:** At the physical HUB 4000 Q there is **NO physical AKG Device connected to slot 1**. Due to that reason the plug-in Stripe (SR 4000 Band Variant V) shown in slot 1 is **OFFLINE**.
3. **Mismatching Stripe:** At the physical HUB 4000 Q a **SR 4000 Band Variant IV** is connected to **slot 1**. At the System Architect plug-in of this HUB 4000 Q at **slot 1** there is configured a **SR 4000 Band Variant II**. The **slot (1)** and the **device type (SR 4000)** are equal at the plug-in Stripe and the physical AKG Device. But the **Band Variant** is different (**Band Variant II vs. IV**) the Stripe at the System Architect is **MISMATCHING** with the physical AKG Device.

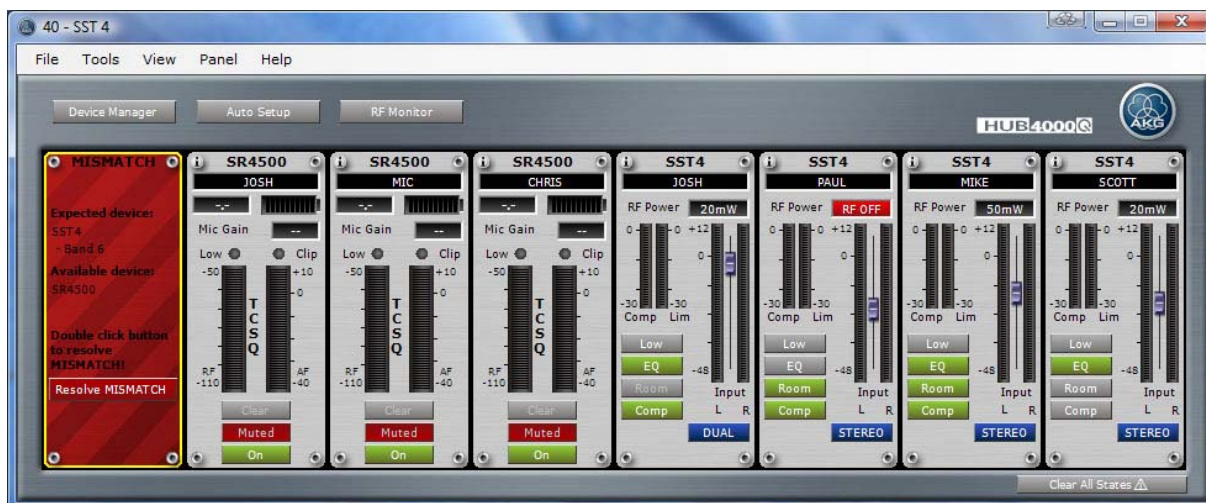
## Mismatch of Stripes - HUB 4000 Q

A Mismatch happens if the [Stripe](#) doesn't match the physical AKG Device.

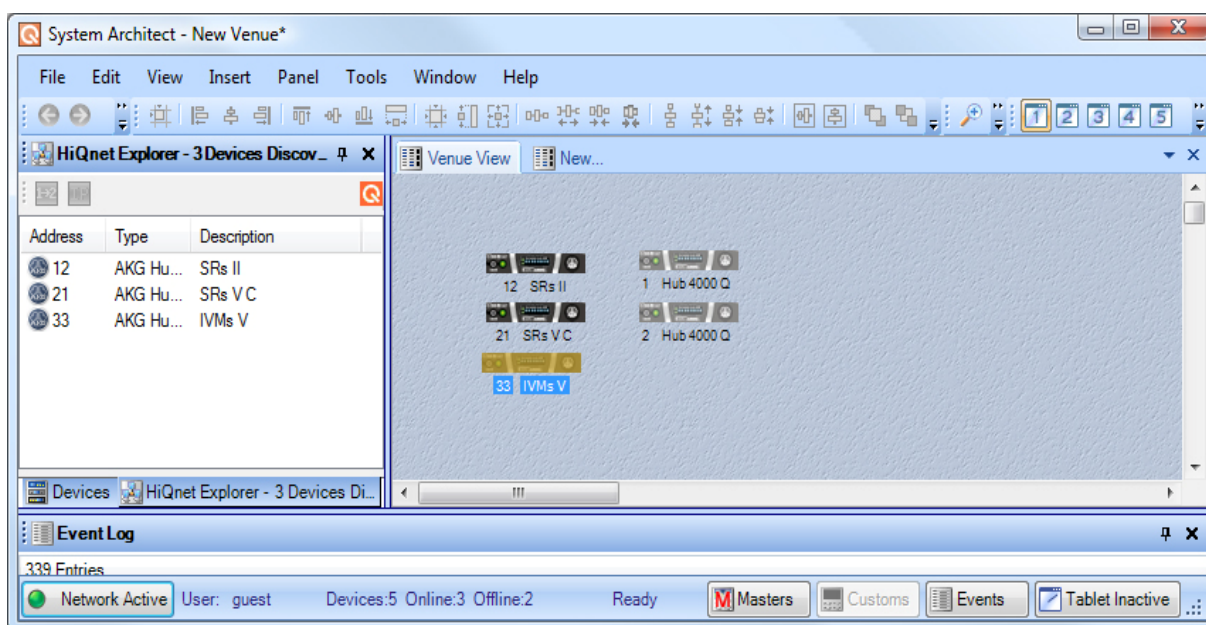
The following parameters must match for a Stripe to come online with NO Mismatch occurring:

- The **slot index** of the Stripe and the slot to which the physical AKG Device is connected must be the same
- The **device type** (SR 4000/4500, SST 4...) must be the same at the Stripe and the physical AKG Device
- The [Band Variant](#) must be the same at the Stripe and the AKG Device

If one of the three criteria is not met, a **Mismatch** between the physical AKG Device and the Stripe will occur. The background of the Stripe will change to red to indicate the Mismatch. Mismatching Stripes cannot be controlled and/or monitored. To edit these Stripes, the Mismatch has to be resolved first (See chapter '[Resolving the Mismatch](#)')!



**Figure:** HUB 4000 Q Product Panel with online and a mismatching (red) Stripes



**Figure:** A HUB 4000 Q which has mismatching Stripes will indicate the Mismatch by setting the Warning State (Yellow Icon) at the Venue View

**Table 1:** The following 2 examples explain cases where a Mismatch can happen

	Hardware configuration	System Architect plug-in configuration	Details	State of Stripe
1	Slot 1: SR 4000 - Band Variant IV	Slot 1: SR 4000 - Band Variant II	same slot, same device type, different Band Variant	Mismatching Stripe

2	Slot 1: SR 4000 - Band Variant VI	Slot 1: SST 4 - Band Variant VI	same slot, <b>different device type</b> , different Band Variant	<b>Mismatching Stripe</b>
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Refer to the '[Resolving the Mismatch](#)' for instructions on how to resolve the Mismatch.

### Resolving the Mismatch - HUB 4000 Q

A Mismatch happens if the [Stripe](#) doesn't match with the physical AKG Device. See '[Mismatch of Stripes](#)' for more information on why a Mismatch can occur.

**Table 1:** The following 2 examples explain cases where a Mismatch can happen

	Hardware configuration	System Architect plug-in configuration	Details	State of Stripe
1	Slot 1: SR 4000 - Band Variant IV	Slot 1: SR 4000 - Band Variant II	same slot, same device type, <b>different Band Variant</b>	<b>Mismatching Stripe</b>
2	Slot 1: SR 4000 - Band Variant VI	Slot 1: SST 4 - Band Variant VI	same slot, <b>different device type</b> , different Band Variant	<b>Mismatching Stripe</b>

### Resolving a Mismatch

The Mismatch can be resolved in two ways:



**Figure:** Mismatching Stripe

- **Resolve at System Architect:**

Double click the **Resolve Mismatch Button** on the Mismatching Stripe (indicated by the red Stripe background).

- The **Expected Device Label** shows the expected device type and the frequency band of the device which was offline.
- The **Available Device Label** shows the available device type and frequency band of the available online physical device.
- The Mismatch will resolve by deleting the offline plug-in Stripe and retrieving all information of the physical AKG Device connected to the hardware HUB 4000 Q and creating a new matching Stripe for that physical AKG Device.

**ATTENTION: All settings of the offline Stripe are lost after resolving the Mismatch!**

- **Resolve at the physical HUB 4000 Q:**

User can resolve the Mismatch by changing the physical AKG Device which causes a Mismatch.

- Take a note which physical AKG Device is expected (from the **Expected Device Label**) with which Band Variant, at which Slot.
- Disconnect the Mismatching physical AKG Device from the hardware HUB 4000 Q and connect a physical AKG Device of the **Device Type** with the **Band Variant** of the expected physical AKG Device (from the **Available Device Label**). The Mismatch at the plug-in will be automatically resolved.

**Table 2:** This table shows how to resolve the Mismatching examples of **Table 1**

	Mismatch caused by	Resolve at Hardware	Resolve at System Architect plug-in
1	<b>Different Band Variant</b>	replace SR 4000 - Band Variant IV with SR 4000 - Band Variant II	double click the ' <i>Use available AKG Device</i> ' menu item at the Mismatch context menu
2	<b>Different device type</b>	replace SR 4000 - Band Variant VI with SST 4 - Band Variant VI	double click the ' <i>Use available AKG Device</i> ' menu item at the Mismatch context menu

## STRIPE

### Stripe - HUB 4000 Q

A Stripe is the software representation of a physical AKG Device (SR 4000/4500, SST 4). The physical AKG Device can be connected to a physical HUB 4000 Q in reality. Then a Stripe will be shown at the [Product Panel](#). Or the user can configure an [Offline Stripes](#) at the [Product Panel](#).

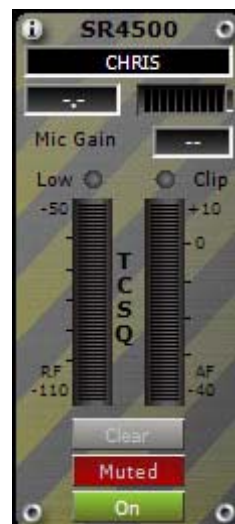
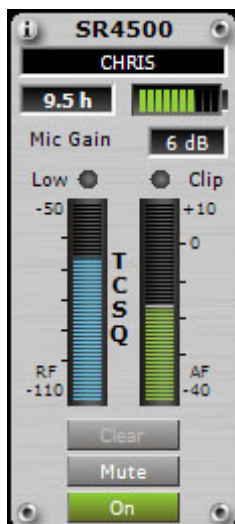
Each Stripe shows several parameters of the physical AKG Device ([SR 4000/4500 Stripe](#), [SST 4 Stripe](#)) and gives the user instant access to control parameters of the AKG Device directly from the Stripe.

The HUB 4000 Q supports now following physical AKG Devices:

- SR 4000/4500 ([SR 4000/4500 Stripe](#)) from the WMS 4000/4500 series
- SST 4 ([SST 4 Stripe](#)) from the IVM 4 series

Each Stripe has the same [Stripe Header](#) to allow the user to simply identify the Stripes.

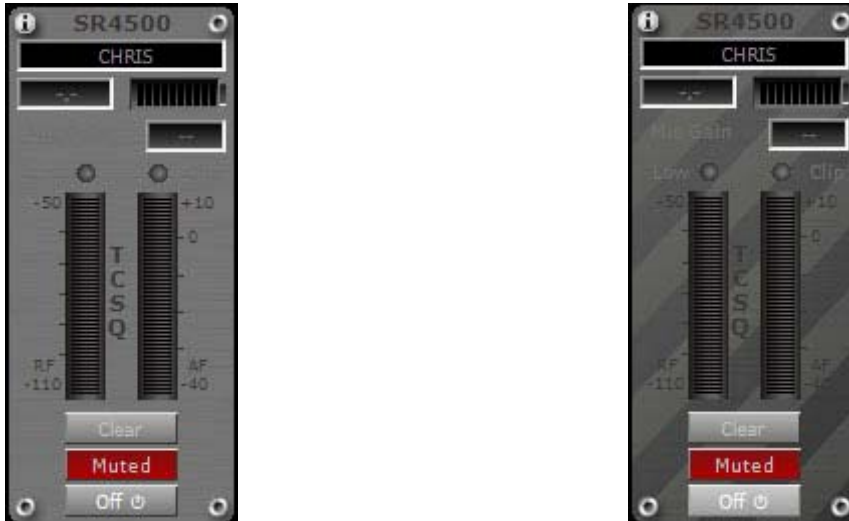
Depending on its [Online / Offline](#) state the Stripe's background will change.





**Figure:** SR 4500 Stripe - ON ([Online](#)) / ON ([Offline](#))

If the Stripe or the dedicated physical AKG Device is switched off then the Stripe's background will turn dark.



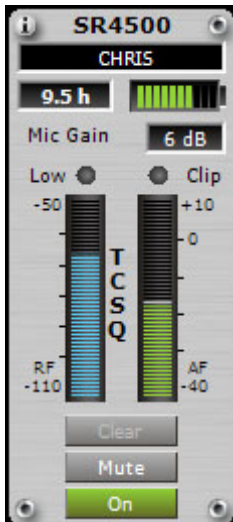
**Figure:** SR 4500 Stripe - OFF ([Online](#)) / OFF ([Offline](#))

If there is a [Mismatch](#) between the physical ONLINE AKG Device and the dedicated Stripe, the background of the Stripe will turn red to indicate the **Mismatch of the AKG Device and the Stripe**.



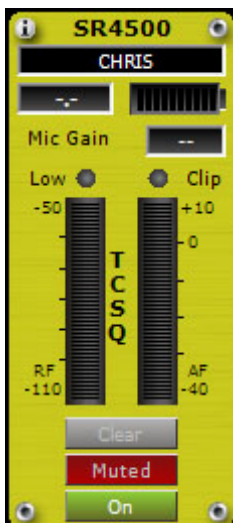
**Figure:** Mismatching Stripe

To select a Stripe the user has to click into the desired Stripe. The selected Stripe is highlighted with a yellow frame.



**Figure:** Selected online SR 4500 Stripe

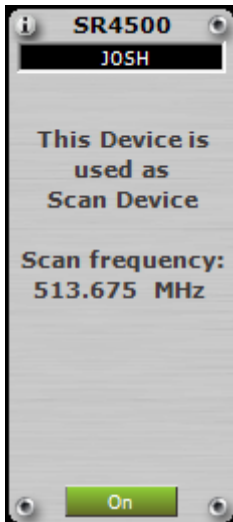
If the dedicated AKG Device is [located](#) then the Stripe changes it's background periodically between the normal and a yellow background.



**Figure:** Located SR 4500 Stripe

If the dedicated AKG Device is used as Scan Device for an [Environment Scan](#) or is defined as [Loop Scan](#) device at the [Devices Grid](#) then the Stripe reflects that with showing the actual Scan Frequency.





**Figure:** SR 4500 Stripe as Scan Device

Unused Stripes are shown without any control.



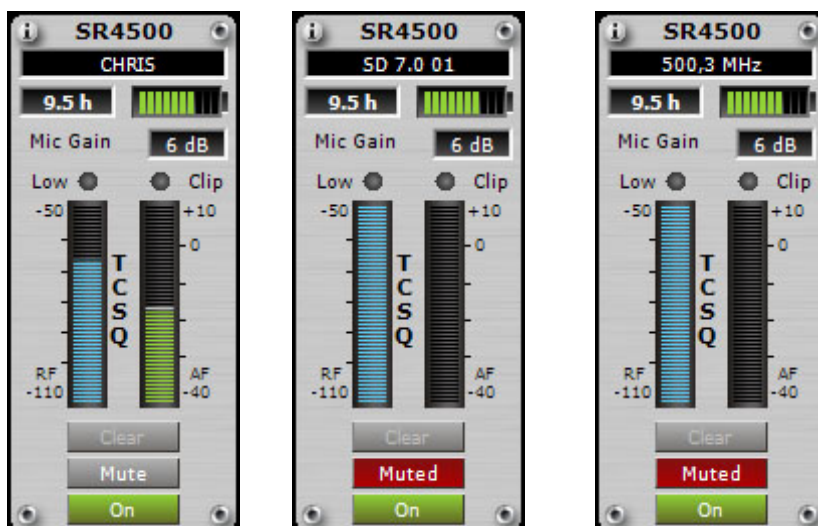
**Figure:** Unused Stripe - [Online](#) / [Offline](#)

### Stripe Header - HUB 4000 Q

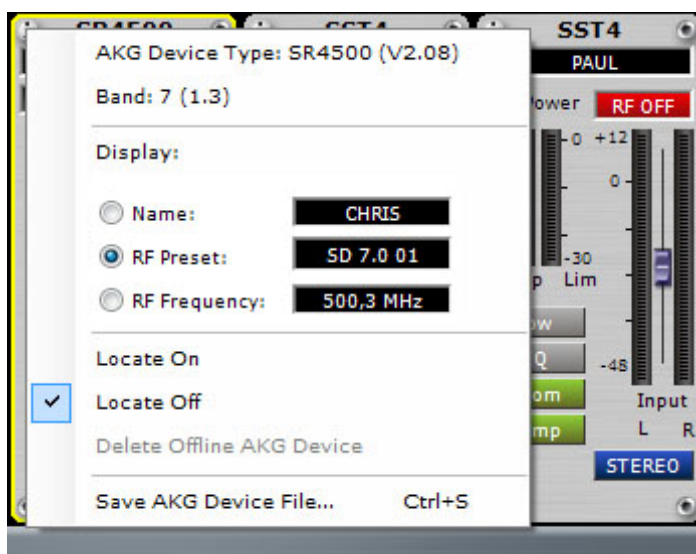
The Stripe Header looks the same at all Stripes ([SR 4000/4500 Stripe](#), [SST 4 Stripe](#)).

- **Device Type Label:** Indicates the Device Type of the Stripe's dedicated physical AKG Device
- **Display:** The main identification of the Stripe can be displayed in three different ways. See the [Context Menu](#) chapter for how to change this display option.
  - **Name Text Box:** Shows the Name of the Stripe and can be changed directly in this text box.

- **RF Preset Label:** Shows the active [RF Preset](#) (can't be set – only indication).  
If a RF Preset is active the Preset is shown (e.g. 'AT 1.0 01') indicating the active country ('AT' for Austria), the active group ('1.0') and the active channel of this group ('01'). The RF Frequency Label at the Stripe Header shows the according RF Frequency of the active RF Preset, for RF Preset 'AT 1.0 01' at the RF Frequency Label '680.05 MHz' is shown.  
If the RF Preset is inactive, meaning that the AKG Device is in [Tune Mode](#), then '-- -- --' (SR 4000/4500) or 'AT -- --' (SST 4, where AT is the selected country) is shown.
- **RF Frequency Label:** Shows the active RF Frequency (can't be set – only indication).  
Example shows '680.05 MHz' for the actual RF Frequency.



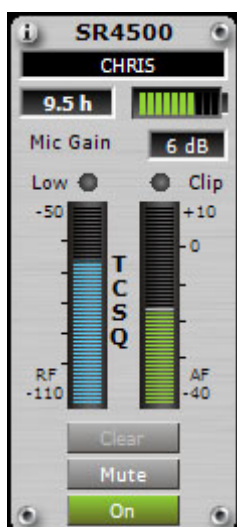
**Figure:** Stripe Header - Name / RF Preset / RF Frequency



**Figure:** Stripe Context Menu for switching between the shown parameter (Name / RF Preset / RF Frequency) of the Stripe Header

## SR 4x00 Stripe - HUB 4000 Q

The SR 4x00 (4000/4500) Stripe is the software representation of a physical SR 4x00 (4000/4500) of the AKG WMS 4x00 (4000/4500 - Wireless Microphone System). The SR 4x00 is a Stationary Receiver which receives the RF signal from a HT 4x00 (Handheld Transmitter) or PT 4x00 (Pocket Transmitter).



**Figure:** SR 4000 Stripe

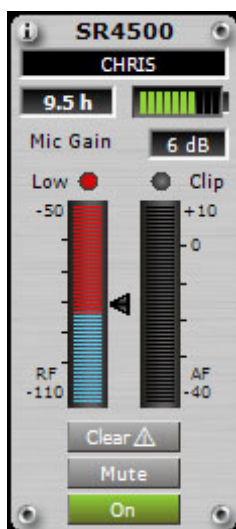
Each SR 4x00 Stripe indicates the following parameters:

- **Stripe Header:** The device type is displayed at the top of the [Stripe Header](#), in this case "SR 4500" (if the device is a SR 4000 "SR 4500" is displayed). The user can choose between three display options which are the Name Text Box, the RF Preset Label and the RF Frequency Label.
- **Transmitter (HT 4x00, PT 4x00) Indications:**
  - **RPT (Rest Play Time) Label - Remaining Battery Capacity:** Indicates the exact remaining capacity in hours of the dry or rechargeable batteries like "6.5 h" (6.5 hours), or BP 4000 (battery pack) inside the transmitter. If the transmitter is switched off the Rest Play Time Label shows "-.-". The background of the RPT Label will change from gray to red if RPT drops below 1 hour. If the RPT drops below 24 minutes the RPT Label starts to blink red to indicate the small amount of remaining capacity at the battery (can't be set – only indication).
  - **Battery Meter:** As long as all segments are green, the battery is at full capacity. Segments will disappear as battery capacity diminishes. The remaining segments will change from green to yellow (if RPT is smaller than 3 hours and finally to red when the remaining capacity drops below

one hour. If the RPT drops below 24 minutes the RPT Label starts to blink red to indicate the small amount of remaining capacity at the battery. If transmitter is switched off all segments are black. (can't be set – only indication).

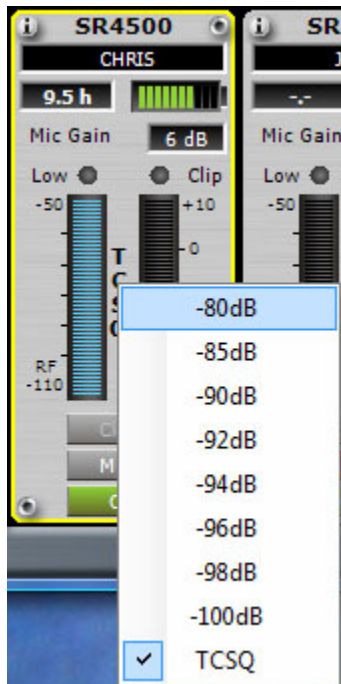
- **Mic Gain Label:** Indicates the current transmitter gain setting in dB (can't be set – only indication).
- **RF Level Meter:** Indicates the strength of the transmitter RF signal in dB (decibel from -110 dB to -50 dB). The RF level meter shows the greater RF level of the two RF antennas of the SR 4x00. As long as the RF level exceeds the selected [Squelch Level](#) (or Squelch threshold), the RF level meter will remain blue.

If the RF level drops below the Squelch Level, the upper part of the RF Level Meter will turn red for three seconds indicating that the RF level dropped under the Squelch Level. The lower part of the RF Level Meter indicates the RF level and is shown blue. If there was once a transmitter linked to the SR 4x00, meaning that the SR 4x00 has received a valid RF Signal at its selected RF Frequency and the transmitter is turned off, the physical SR 4x00 will show "TX OFF" at its display. To indicate the state that the SR 4x00 lost the link to the transmitter, the RF Level Meter shows "TX OFF" in red.



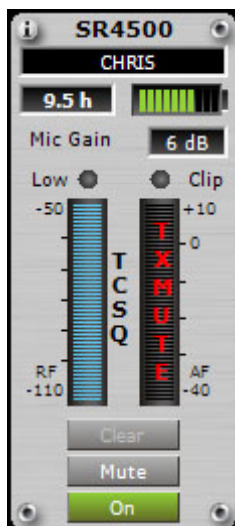
**Figure:** RF Level Meter - upper part turns red (approx. 3 seconds) if RF level drops below the Squelch Level

- **RF Low LED:** The RF Low LED above the RF Level Meter will remain lit permanently red if the physical SR 4x00 detects RF Low and shows "RF Low" at its display. That means that the RF level dropped below the Squelch Level for a certain time. User can reset the RF Low LED and the warning state at the SR 4x00 with the **Clear Button** (see below) or the at the physical device itself.
- **Squelch Arrow:** The Squelch Arrow at the right side of the RF Level Meter indicates the current [Squelch](#) setting. If the SR 4x00 uses Tone Code Squelch (TCSQ), the Squelch Arrow will not be displayed. Instead "TCSQ" is displayed. With a right-click on the Squelch Arrow control, a context menu will open where the user can set the Squelch. If the user selects a Squelch Level from -80dB to -100db the Squelch is set to this level and Tone Code Squelch is not used. If the user selects "TCSQ" then Tone Code Squelch is used.



**Figure:** Squelch Arrow context menu opened

- **AF Level Meter:** Indicates the level of the received audio signal (AF level) from the transmitter in dB (decibel from -30 dB to +10 dB). If the transmitter is muted with the MUTE switch on the transmitter the AF Level Meter will show no AF level and "**TX MUTE**" will be shown via the AF Level Meter.



**Figure:** AF Level Meter is indicating that the HT or PT muted switch is active with displaying "**Muted**".

- **AF Clip LED:** The AF Clip LED indicates the AF clip state of the SR 4x00. The "AF Clip" LED is lit red if the AF level (audio level) exceeds the clipping threshold until it is reset. User can reset the AF Clip LED and the warning state at the SR 4x00 with the **Clear Button** (see below) or the at the physical device itself.

- **Clear States Button:** User can reset the RF Low LED, the AF Clip LED and the states at the physical SR 4x00 with a click on the **Clear States Button**. All states at the physical SR 4x00 will be cleared except the "TX OFF" warning. The Clear Button is only enabled if there is a state to clear. If there is no state to clear the Clear State Button will be disabled. At the [Product Panel](#) or the [Master Control Panel](#) all RF Low LEDs, the AF Clip LEDs and states of all physical SR 4x00s can be cleared with the **Clear All States Button**. The clearing of states is supported only for SR 4000 Firmware Version 1.22 and all SR 4500 firmware versions ([Unsupported Features](#))!
- **Mute Button:** A click at the Mute Button mutes the audio output of the SR 4x00. The button is dark gray in normal operation (NOT MUTED) and will turn red when you press it. If there is no transmitter linked to the SR 4x00 the Mute Button is always red because audio mute is always active at the physical SR 4x00. The Mute Button is disabled because the SR 4x00 can't be unmuted if there is no linked transmitter connected to it.
- **On/Off Button:** Switches the SR 4x00 ON and OFF. If the SR 4x00 is ON then the button is lit green and labeled "On". If the Stripe is OFF then the button is gray and labeled "Off".

Not all Features of the SR 4000 Stripe are supported at all SR 4000 Firmware versions. Please refer to the [Unsupported Features](#) section.

### SST 4 Stripe - HUB 4000 Q

The SST 4 Stripe is the software representation of a physical SST 4 of the AKG IVM 4 (Individual Virtual Monitoring - Wireless monitoring system). The SST 4 is a Stationary Stereo Transmitter and is transmitting a RF signal which can be received from a SPR 4 (Stereo Pocket Receiver).



**Figure:** SST 4 Stripe

Each SST 4 Stripe indicates the following parameters:

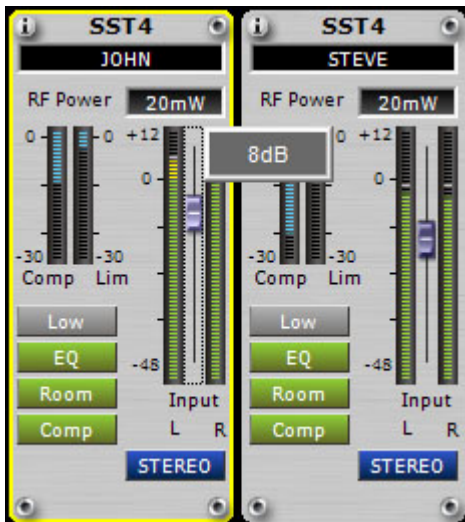
- **Stripe Header:** The device type is displayed at the top of the [Stripe Header](#), in this case "SST 4". User can choose between three display options which are the Name Text Box, the RF Preset Label and the RF Frequency Label.
- **RF Power Label:** The RF Power Label indicated the chosen [RF Power](#) of the SST 4 in mW (in milli Watt). With a right-click on the RF Power Label a context menu is opened where user will see the actual chosen RF Power and with a click on a menu item the user can change the RF Power of the SST 4 immediatley. If the RF Power is turned off, meaning that the physical SST 4 doesn't transmit a RF signal, the background of the RF Power Label turns red.



**Figure:** RF Power Label Context Menu opened

- **Compressor Reduction Meter:** Indicates the reduction gain of the compressor in dB (decibel from 0 dB to -30 dB) if the compressor is turned on (see **Compressor Button**).
- **Limiter Reduction Meter:** Indicates the reduction gain of the limiter in dB (decibel from 0 dB to -30 dB) which is turned on all time, meaning that the limiter can't be turned off.
- **AF Level Meters:** The AF Level Meters indicating both audio levels of the left and right channel of the SST 4 in dB (decibel from -48 dB to +12 dB).
- **Input Gain Slider:** With the Input Gain Slider the Input Gain of the SST 4 can be changed from -20 dB to + 20 dB (decibel).

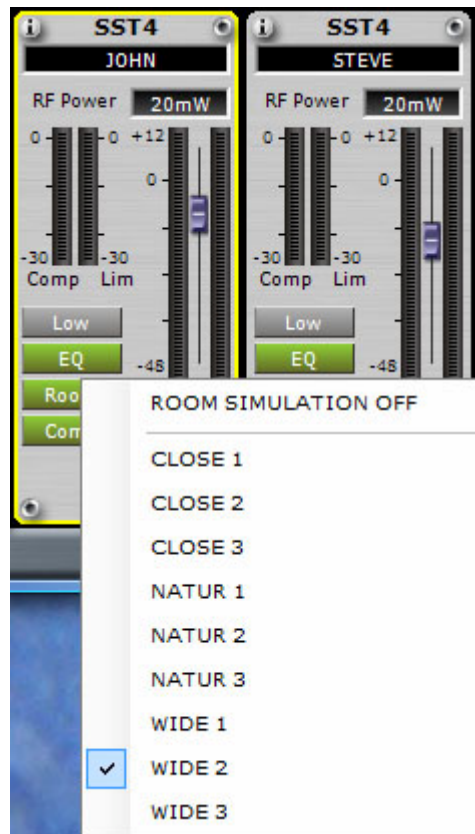




**Figure:** Input Gain Slider changed - the actual value is shown

- **FX Preset Buttons:** With the FX Buttons the user can turn the built in audio effects of the SST 4 ON or OFF and choose the factory preset for that audio effect. With a click on the FX Button, the user can turn the audio effect ON or OFF.. With a right-click the context menu of that FX Preset Button is opened and user can see the actual selected audio effect preset or choose a factory audio preset. The FX Preset Button is lit green if the audio effect is ON and gray if it's OFF.
  - **Low Cut Button:** FX Preset Button for the Low Cut Filter. This Button indicates if the Low Cut is ON or OFF and the cut off frequency of the Low Cut Filter. User can't turn the Low Cut Filter ON or OFF with that button or set the cut off frequency. That is only possible at the physical SST 4 hardware device (See [Unsupported Features](#)).
  - **EQ Button:** FX Preset Button for the Equalizer to shape the audio signal in the frequency space.
  - **Room Simulation Button:** FX Preset Button for the Room Simulation for adding a room signal to the audio signal.
  - **Compressor Button:** FX Preset Button for the Compressor to compress the audio signal at its amplitude dynamic range.





**Figure:** EQ FX Button Context Menu opened

- **Mode Button:** Button for alternating between the three audio modes of the SST 4.
  - **Stereo:** At Stereo Mode the audio input signal is interpreted as a stereo input signal. The left audio input signal is sent to the left channel of the SPR 4 and the right audio input signal is sent to the right channel of the SPR 4.
  - **Mono:** At the Mono Mode the audio input signal is interpreted as a mono input signal. The left audio input signal is sent to the left and right channel of the SPR 4.
  - **Dual:** At the Dual Mode both audio input signals of the left and right channel of the SST 4 can be totally different. For example, for a singer one channel is the vocal signal and the other the band mix signal. Then the singer can mix the both signals directly in the SPR 4.

## Context Menus

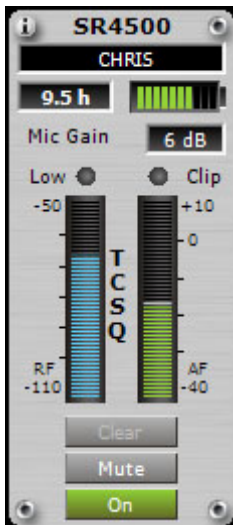
### General Context Menus - HUB 4000 Q

Each Stripe has several context menus which are different depending on the Stripe's state:

- [Default Context Menu](#) (Normal Stripe State Online / Offline)
- [Empty Stripe Context Menu](#) (Empty slot at an Offline HUB 4000 Q)

These Context Menus can be opened

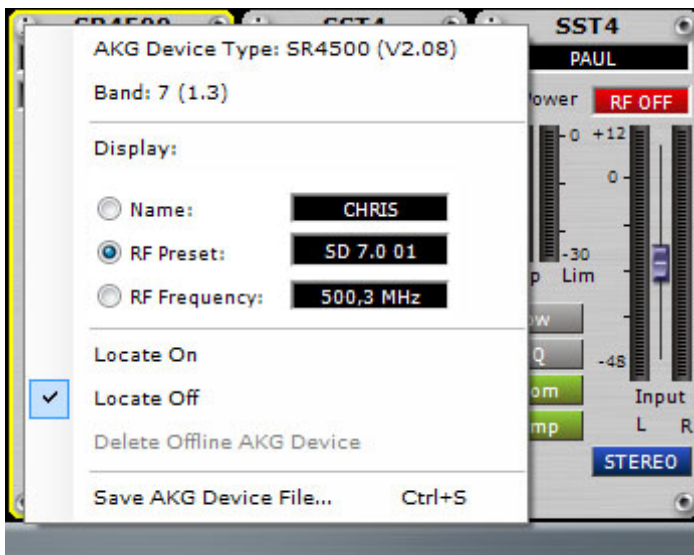
- If the user clicks at the **Info Button**



- If the user right-clicks at the Stripe in a region where no control resides.

## Default Context Menu - HUB 4000 Q

If there is no [Mismatch](#) then the Default Context Menu is opened with a right-click at the Stripe.



**Figure:** Default Stripe Context Menu

- **Device Type:** Type of Stripe: SR4000/4500, SST 4... - in Brackets: Firmware Version of the physical AKG Device (can't be set – only indication)
- **Band Variant:** Band Variant of Stripe - in Brackets: [Preset Version](#) (can't be set – only indication)

- **Display:** The main identification ([Stripe Header](#)) of the Stripe can be displayed in three different ways:
  - **Name:** Displays the **Name Text Box** which shows the name of the Stripe. Can be changed directly at this text box.
  - **RF Preset:** Displays the **RF Preset Label** which shows the active [RF Preset](#) (can't be set – only indication)
  - **Frequency:** Displays the **RF Frequency Label** which shows the active [RF Frequency](#) (can't be set – only indication)
- **Locate On:** By clicking on this menu item the Stripe is [located](#). If checked the Stripe is currently located.
- **Locate Off:** By clicking on this menu item the Stripe is [NOT located](#). If checked the Stripe is currently NOT located.
- **Delete Offline Stripe:** This menu item is only enabled if the Stripe is [Offline](#). By clicking on this menu item the offline Stripe is deleted.  
**WARNING: All settings of this offline Stripe will be LOST!**
- **Save AKG Device File:** If this menu item is clicked the Stripe settings can be saved to computers hard drive. All Stripe settings are saved within the AKG Device file ([Saving / Loading AKG Device](#)).

### Empty Stripe Context Menu - HUB 4000 Q

If the Stripe is empty and OFFLINE, then the user can create an [Offline Stripe](#) by loading a previously [saved AKG Device File](#). With a right-click on the empty Stripe, the Empty Stripe Context Menu opens and the user can load the AKG Device file which will create an OFFLINE Stripe.



**Figure:** Stripe Context Menu of an empty offline Stripe

**Load AKG Device File:** With a click on this menu item, the user can [load an AKG Device File](#) to an empty Stripe to create an [Offline Stripe](#). This is only possible if the HUB 4000 Q is offline.

## DEVICE MANAGER

### General Device Manager - HUB 4000 Q

The Device Manager is the main place for setting up and monitoring the [Frequency Management](#). Device Manager has 4 main functions which can be accessed with 3 tab - pages and a button.

- **Device Grid Tab page:** The [Device Grid](#) gives the user a great overview over the [Frequency Management](#) of the wireless system. Frequency Management can be easily changed.
- **Frequency Graph Tab page:** The [Frequency Graph](#) gives a graphical overview over the [RF Environment](#) and allows the user to perform an [Environment Scan](#) and get a graphical representation of the scanned RF Environment.
- **Add Offline Devices Tab page:** At the [Add Offline Devices](#) Tab page the user can add and configure [offline Stripes](#) at the [offline HUB 4000 Qs](#).

Name	Type	Band	HUB	Locate	Country	Group	Channel	Frequency	Optional	Status	Send To	Receive From	Loop Scan
1	SR4000	2	12 - 4000 II	Locate	US	1.0	1	680,050	TCSQ	OFFLINE	Send To	Receive From	<input type="checkbox"/>
2	SR4000	2	12 - 4000 II	Locate	US	1.0	2	681,250	TCSQ	OFFLINE	Send To	Receive From	<input type="checkbox"/>
3	SR4000	2	12 - 4000 II	Locate	US	1.0	3	681,650	TCSQ	OFFLINE	Send To	Receive From	<input type="checkbox"/>
4	SR4000	2	12 - 4000 II	Locate	US	1.0	4	683,050	TCSQ	OFFLINE	Send To	Receive From	<input type="checkbox"/>
5	SR4000	2	12 - 4000 II	Locate	US	1.0	5	691,050	TCSQ	OFFLINE	Send To	Receive From	<input type="checkbox"/>
6	SR4000	2	12 - 4000 II	Locate	US	1.0	6	704,850	TCSQ	OFFLINE	Send To	Receive From	<input type="checkbox"/>
7	SR4000	2	12 - 4000 II	Locate	US	1.0	7	708,650	TCSQ	OFFLINE	Send To	Receive From	<input type="checkbox"/>
8	SR4000	2	12 - 4000 II	Locate	US	1.0	8	698,050	TCSQ	OFFLINE	Send To	Receive From	<input type="checkbox"/>
SLOT1	SR4000	4.A	34 - SR IV	Locate	US	1.0	1	760,000	TCSQ	ONLINE	Send To	Receive From	<input type="checkbox"/>
MYNAME	SR4000	4.A	34 - SR IV	Locate	US	1.0	4	763,000	TCSQ	ONLINE	Send To	Receive From	<input type="checkbox"/>
MYNAME	SR4000	4.A	34 - SR IV	Locate	US	1.0	3	761,600	TCSQ	ONLINE	Send To	Receive From	<input type="checkbox"/>
PHIPS1	SR4000	4.A	34 - SR IV	Locate	US	1.0	2	761,200	TCSQ	ONLINE	Send To	Receive From	<input type="checkbox"/>
ERAMES	SR4000	4.A	34 - SR IV	Locate	US	1.0	5	771,000	TCSQ	ONLINE	Send To	Receive From	<input type="checkbox"/>
SUSY	SR4000	4.A	34 - SR IV	Locate	US	1.0	6	784,800	TCSQ	ONLINE	Send To	Receive From	<input type="checkbox"/>
MYNAME	SR4000	4.A	34 - SR IV	Locate	US	1.0	7	788,600	TCSQ	ONLINE	Send To	Receive From	<input type="checkbox"/>
MYNAME	SR4500	5	22 - 4500 V	Locate	SD	5.0	2	791,200	TCSQ	ONLINE	Send To	Receive From	<input type="checkbox"/>
MYNAME	SR4500	5	22 - 4500 V	Locate	SD	5.0	3	791,600	TCSQ	OFFLINE	Send To	Receive From	<input type="checkbox"/>
MYNAME	SR4500	5	22 - 4500 V	Locate	SD	5.0	4	793,000	TCSQ	ONLINE	Send To	Receive From	<input type="checkbox"/>
JOHN	SST4	5.E5	40 - SST 4	Locate	AT	5.A	1	790,100	20mW	ONLINE	Send To	Receive From	<input type="checkbox"/>
LARRY1	SST4	5.E5	40 - SST 4	Locate	AT	5.A	2	793,900	20mW	ONLINE	Send To	Receive From	<input type="checkbox"/>
STEVE	SST4	5.E5	40 - SST 4	Locate	AT	5.A	3	796,300	20mW	ONLINE	Send To	Receive From	<input type="checkbox"/>
SUSY1	SST4	5.E5	40 - SST 4	Locate	AT	5.A	4	798,100	20mW	ONLINE	Send To	Receive From	<input type="checkbox"/>
GARY	SST4	6.E5	40 - SST 4	Locate	AT	--	--	842,000	RF OFF	ONLINE	Send To	Receive From	<input type="checkbox"/>
	SST4	6.E5	40 - SST 4	Locate	AT	--	--	840,000	RF OFF	ONLINE	Send To	Receive From	<input type="checkbox"/>
1	SR4500	7	11 - BAND...	Locate	--	--	--	503,900	TCSQ	ONLINE(0...	Send To	Receive From	<input type="checkbox"/>

**Figure:** Device Manager - [Device Grid](#)

### Device Grid - HUB 4000 Q



The Device Grid gives the user a great overview over the [Frequency Management](#) of a wireless system. The Frequency Management can be easily changed and monitored.

All Stripes (AKG Devices) in the wireless system are shown at this grid at once. User can sort after columns.

All changes on the Device Grid are done offline. This means that the wireless system is not affected with any changes as long as the user doesn't send the changes to AKG devices. This can be done for each AKG Device separately with the grid rows **Send To Buttons** or for all AKG Devices together with the **Send To All Button** at the bottom of the Tab page.

Name	Type	Band	HUB	Locate	Country	Group	Channel	Frequency	Optional	Status	Send To	Receive Fro	Loop Scan
1	SR4000	2	12 - 4000 II	Locate	US	1.0	1	680,050	TCSQ	OFFLINE	Send To	Receive From	
2	SR4000	2	12 - 4000 II	Locate	US	1.0	2	681,250	TCSQ	OFFLINE	Send To	Receive From	
3	SR4000	2	12 - 4000 II	Locate	US	1.0	3	681,650	TCSQ	OFFLINE	Send To	Receive From	
4	SR4000	2	12 - 4000 II	Locate	US	1.0	4	683,050	TCSQ	OFFLINE	Send To	Receive From	
5	SR4000	2	12 - 4000 II	Locate	US	1.0	5	691,050	TCSQ	OFFLINE	Send To	Receive From	
6	SR4000	2	12 - 4000 II	Locate	US	1.0	6	704,850	TCSQ	OFFLINE	Send To	Receive From	
7	SR4000	2	12 - 4000 II	Locate	US	1.0	7	708,650	TCSQ	OFFLINE	Send To	Receive From	
8	SR4000	2	12 - 4000 II	Locate	US	1.0	8	698,050	TCSQ	OFFLINE	Send To	Receive From	
SLOT1	SR4000	4.A	34 - SR IV	Locate	US	1.0	1	760,000	TCSQ	ONLINE	Send To	Receive From	
MYNAME	SR4000	4.A	34 - SR IV	Locate	US	1.0	4	763,000	TCSQ	ONLINE	Send To	Receive From	
MYNAME	SR4000	4.A	34 - SR IV	Locate	US	1.0	3	761,600	TCSQ	ONLINE	Send To	Receive From	
PHIPS1	SR4000	4.A	34 - SR IV	Locate	US	1.0	2	761,200	TCSQ	ONLINE	Send To	Receive From	
ERAMES	SR4000	4.A	34 - SR IV	Locate	US	1.0	5	771,000	TCSQ	ONLINE	Send To	Receive From	
SUSY	SR4000	4.A	34 - SR IV	Locate	US	1.0	6	784,800	TCSQ	ONLINE	Send To	Receive From	
MYNAME	SR4000	4.A	34 - SR IV	Locate	US	1.0	7	788,600	TCSQ	ONLINE	Send To	Receive From	
MYNAM	SR4500	5	22 - 4500 V	Locate	SD	5.0	2	791,200	TCSQ	ONLINE	Send To	Receive From	
MYNAME	SR4500	5	22 - 4500 V	Locate	SD	5.0	3	791,600	TCSQ	OFFLINE	Send To	Receive From	
MYNAME	SR4500	5	22 - 4500 V	Locate	SD	5.0	4	793,000	TCSQ	ONLINE	Send To	Receive From	
JOHN	SST4	5.E5	40 - SST 4	Locate	AT	5.A	1	790,100	20mW	ONLINE	Send To	Receive From	
LARRY1	SST4	5.E5	40 - SST 4	Locate	AT	5.A	2	793,900	20mW	ONLINE	Send To	Receive From	
STEVE	SST4	5.E5	40 - SST 4	Locate	AT	5.A	3	796,300	20mW	ONLINE	Send To	Receive From	
SUSY1	SST4	5.E5	40 - SST 4	Locate	AT	5.A	4	798,100	20mW	ONLINE	Send To	Receive From	
GARY	SST4	6.E5	40 - SST 4	Locate	AT	--	--	842,000	RF OFF	ONLINE	Send To	Receive From	
	SST4	6.E5	40 - SST 4	Locate	AT	--	--	840,000	RF OFF	ONLINE	Send To	Receive From	
1	SR4500	7	11 - BAND...	Locate	--	--	--	503,900	TCSQ	ONLINE(0...	Send To	Receive From	

**Figure:** Device Manager - Device Grid

- **Device Grid:**
  - **Name:** Name of the AKG Device.
  - **Type:** AKG Device type e.g. SR 4000/4500, SST 4... (can't be changed within the Device Grid).
  - **Band:** [Band Variant](#) of the AKG Device (can't be changed within the Device Grid; default sorting column, sorting can be changed with clicking on any column header).
  - **HUB:** Address and name of the HUB 4000 Q the AKG Device is dedicated to (can't be changed within the Device Grid).
  - **Locate Button:** Locate Button with which the AKG Device can be [located](#). If the AKG Device is located then the Button is labeled with 'LOCATING' and has a green background.

- **Country:** Active chosen Country of the [RF Preset](#) of the AKG Device. If no Country is chosen "-" is displayed.

If the AKG Device is in [Preset Mode](#) than the background of this cell is blue and the font is italic. If the AKG Device is in [Tune Mode](#) than the background of this cell is gray and the font is default.

- **Group:** Active chosen Group of the [RF Preset](#) of the AKG Device. If no Group is chosen "-" is displayed.

If the AKG Device is in [Preset Mode](#) than the background of this cell is blue and the font is italic. If the AKG Device is in [Tune Mode](#) than the background of this cell is gray and the font is default.

- **Channel:** Active chosen Channel of the [RF Preset](#) of the AKG Device. If no Channel is chosen "-" is displayed.

If the AKG Device is in [Preset Mode](#) than the background of this cell is blue and the font is italic. If the AKG Device is in [Tune Mode](#) than the background of this cell is gray and the font is default.

- **Frequency:** Active chosen [RF Frequency](#) of the AKG Device.

If AKG Device is in [Tune Mode](#) than the background of this cell is blue and the font is italic. If the AKG Device is in [Preset Mode](#) than the background of this cell is gray and the font is default.

- **Optional:** Depends on the Device Type:
  - **SR 4x00 - Squelch:** Indicates the [Squelch Level or Tone Code Squelch](#) (TCSQ) of the SR 4x00
  - **SST 4 - RF Power:** Indicates the [RF Power](#) of the SST 4
- **State:** Indicates the state of the AKG Device. Following states are possible
  - **ONLINE:** AKG Device is ONLINE and ON
  - **ONLINE(OFF):** AKG Device is ONLINE and OFF
  - **OFFLINE:** AKG Device is OFFLINE
  - **MISMATCH:** AKG Device is currently [Mismatching](#)
  - **INVALID:** AKG Device is INVALID. This AKG Device can't be used. Please contact the [AKG support \(www.akg.com\)](#)

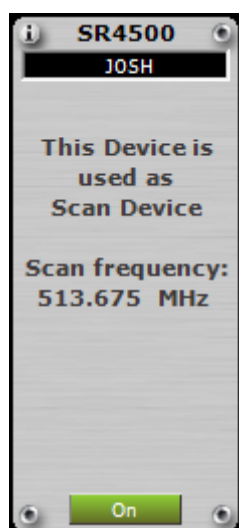
- **Send To Button:** Sends the user changes of the grid row to the AKG Device. The button is only enabled if there are different values at the grid row and the dedicated AKG Device (Button background is blue). If the Button is disabled the grid row and the dedicated AKG Device are up to date (Button background is gray).
- **Receive From Button:** Discards the user changes of the grid row and resets all values of the grid row to the original AKG Devices values. The button is only enabled if there are different values at the grid row and the dedicated AKG Device (Button background is blue). If the Button is

disabled the grid row and the dedicated AKG Device are up to date (Button background is gray).

- **Loop Scan Check Box:** If checked this AKG Device is used as **Loop Scanner** for the [Environment Scan](#). The grid row changes its background to red because this AKG Device can only be used as Loop Scanner and not for linking it to a transmitter to receive audio signals.
- **Send To All Button:** Sends all user changes of the grid to all AKG Devices at once. The button is only enabled if there are different values at any of the grid rows and their dedicated AKG Devices (Button background is blue). If the Button is disabled all grid rows and all dedicated AKG Devices are up to date (Button background is gray).
- **Receive From All Button:** Discards all user changes and reset all values of the grid to the original AKG Devices values. The button is only enabled if there are different values at any of the grid rows and their dedicated AKG Devices (Button background is blue). If the Button is disabled all grid rows and all dedicated AKG Devices are up to date (Button background is gray).
- **Selected Device:** The actual selected AKG Device or grid row is marked with a yellow background (except if the device is invalid or a Loop Scan device the background changes to orange). At the Frequency Graph this AKG Device is also marked yellow and its Band Variant information is shown at the [Frequency Graph](#).

## Environment Scan - HUB 4000 Q

The Environment Scan scans the [RF Environment](#) of the wireless system. For the Environment Scan AKG SR 4x00 devices are used. Due to this reason the used SR 4x00s can't be used for receiving RF signals from transmitter while performing an Environment Scan. As long as a SR 4x00 is used for an Environment Scan the display of the SR 4x00 will show " - **SCAN** - " and the user will not be able to use the SR 4x00 hardware device. The SR 4x00 Stripe will show also that it is used as Scan Device.



**Figure:** SR 4500 Stripe as Scan Device

With the environment data user can easily identify RF issues. For example, if a receiver RF frequency is set to a RF frequency where the RF noise level is higher than the squelch level of the receiver.

Each Band Variant is scanned separately. Only Band Variants where at least one valid scan device is residing can be scanned. For performing an Environment Scan at on Band Variant valid scan devices are needed.

**A valid scan device must fulfil following rules:**

- **Device Type:** SR4000 - Firmware Version 1.22 (see [Unsupported Features](#) for Firmware Version 1.10), SR 4500 all Firmware Versions
- **State:** Online - Turned ON
- **No Transmitter (HT / PT 4x00) linked**

The plug in is able to scan in two different ways:

- **Auto Scan:** Auto Scan is used to setup a wireless system or for troubleshooting and proofing the RF Environment before the wireless system is used. Auto Scan uses all SR 4x00s at one [Frequency Band](#) at one time which are online and not linked to a transmitter. Because multiple SR 4x00s are used the Environment Scan is performed fast and precise (with 8 SR 4x00s at one Frequency Band an Environment Scan for 30 MHz last approx. 7 seconds).
- **Loop Scan:** Loop Scan is used during an event like a gig. It scans the RF Environment periodically with one SR 4x00 at one [Frequency Band](#). Because Loop Scan scans periodically, changes in the RF environment can be found and detected very fast. The Loop Scan device for each Frequency Band can be chosen at the [Device Grid](#) with the **Scan Check Box** at the **Scan Column** of the **Device Grid**.

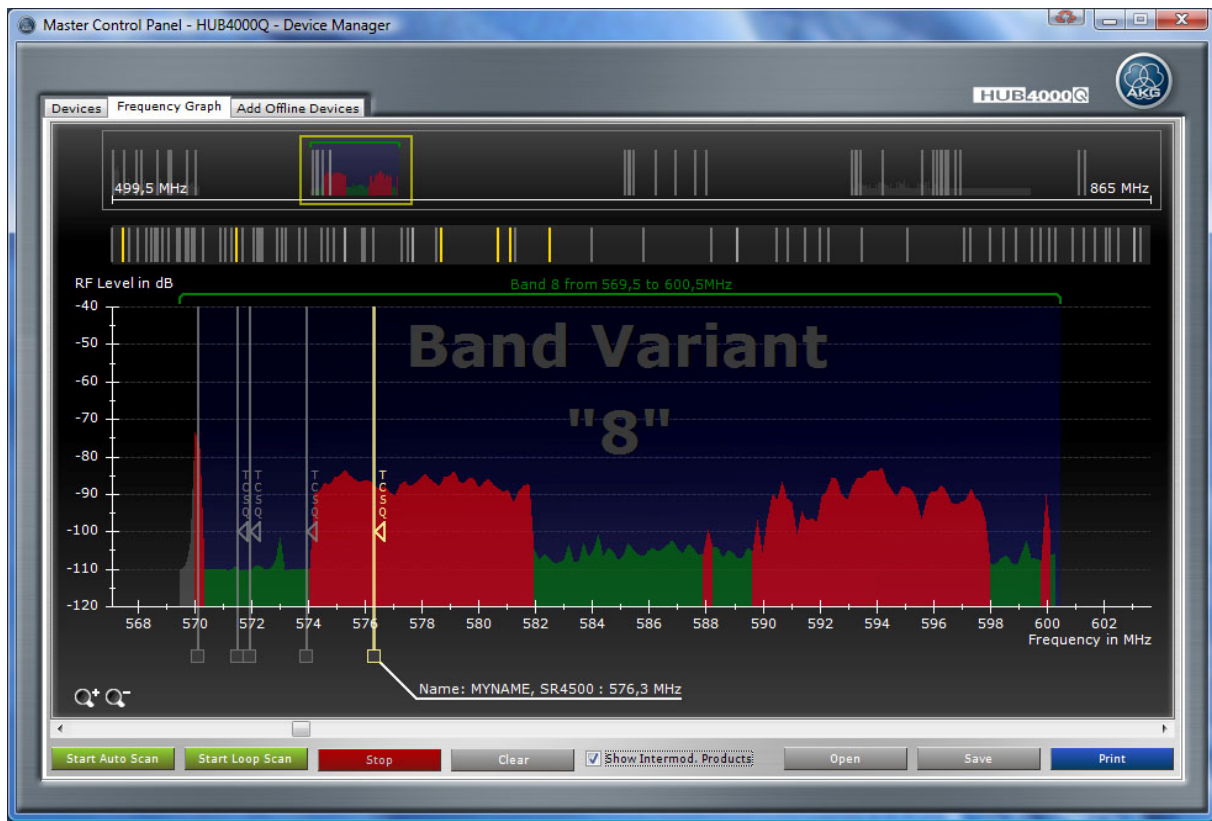
The Environment Scan can only be done if the SR 4x00 device is ONLINE. If there is no SR 4x00 at the wireless system which is online then no Environment Scan can be performed. SR 4000s which have a link to a transmitter cannot be used for an Environment Scan. If not a device can be used for scanning at Frequency Graph there will be displayed a message at Frequency Graph why no Environment Scan can be performed.

Reasons why NO Environment Scan can performed:

- Scan Device is turned OFF - **Solution: Turn all Scan Devices ON**
- Scan Device is OFFLINE - **Solution: All Scan Devices must be ONLINE**
- Scan Device is LINKED to a transmitter (HT / PT 4x00) - **Scan Devices shouldn't be LINKED to a transmitter**
- If a Environment Scan with multiple Scan Devices is performed a mixture of the first 3 reasons may have occurred



The Environment Scan Data will be shown at the [Frequency Graph](#).



**Figure: Device Manager - [Frequency Graph](#)**

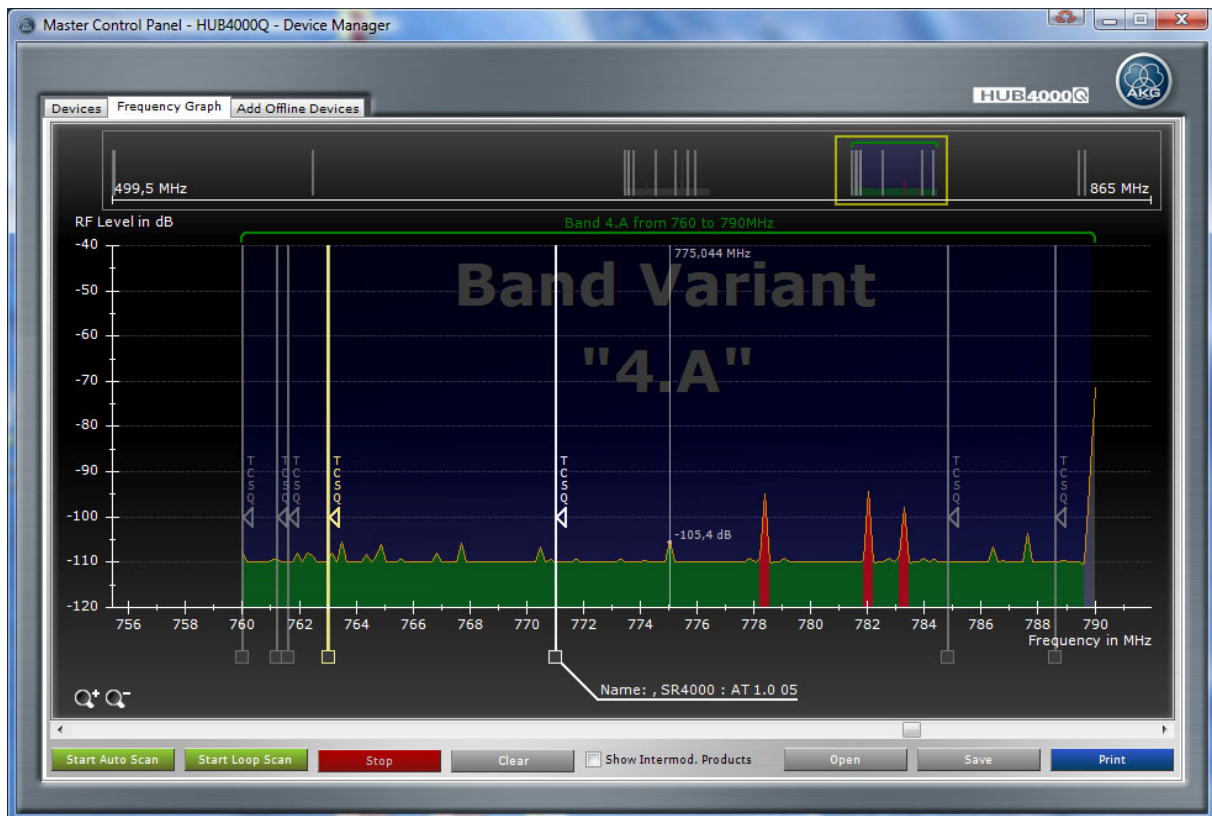
As long as the SR 4x00 is performing an Environment Scan all Stripe which are scanning will change their appearance. They will show only the Stripe Header and the actual RF Frequency at which the SR 4x00 is currently scanning.



**Figure: SR 4500 Stripe is Scan Device while performing an Environment Scan**

## Frequency Graph - HUB 4000 Q

In the Frequency Graph the user can perform an [Environment Scan](#) and has a perfect tool to get an overview over the [RF Environment](#) in a graphical way. The entire RF frequency spectrum is displayed and can be zoomed in and out and searched through. The user can decide to get an overview over the entire RF environment with all used AKG Devices (Device Markers) or zoom in and scroll through the RF frequency spectrum to check in detail what the RF Environment is all about.



**Figure:** Device Manager - Frequency Graph with Environment Scan data

- **Selected Region Graph:** The Selected Region is the main part of the Frequency Graph and shows all information which the user needs to see what's going on in the RF Environment. It shows information about all AKG Devices and Environment Scan data. The Selected Region can be easily changed with the scroll bar at the bottom of the Frequency Graph or with clicking into the Navigation Graph or with zooming in or out.
  - **Device Marker:** Each Device Marker is a graphic representation of an AKG Device. The Device Marker shows information about the RF settings of the AKG Device and is gray:
    - The horizontal position of the Device Marker shows the RF Frequency of the AKG Device in MHz.
    - If the AKG Device has a Squelch Level (e.g. SR 4x00) then a small triangle shows the Squelch Level.

- If the mouse hovers over a Device Marker it turns to white and some additional information displayed at the bottom of the Frequency Graph:
  - The name of the AKG Device, the AKG Device Type, the [RF Frequency](#) if AKG Device is in [Tune Mode](#) and the name of the RF Preset if the AKG Device is in [Preset Mode](#).
- If the mouse hovers over several Device Markers which are overlapping, meaning that the Device Markers are at the exact same RF Frequency or are so close together that it seems that they are on the same RF Frequency, at the bottom of the Frequency Graph the information will say "**Overlapping Device Markers**".

If user zooms into Frequency Graph than the Device Markers which are very close can may be seen separately.

- **Selected Device Marker:** The selected Device Marker is yellow. The Selected Device Marker is always the Device Marker of the selected AKG Device which is always the same for the Frequency Graph and the [Device Grid](#). To select a Device Marker simply click on the Device Marker.

For the Selected Device Marker the following information is shown:

- The Band Variant is written at the background.
- The Band RF frequency range is shown with the green lines at the top of the Selected Region Graph. Within this RF frequency range the AKG Device is able to receive (SR 4000) or transmit (SST 4) RF signals.
- The RF [Frequency Limits](#) are shown in blue. These are the RF Frequency Limits at which the user is allowed to set the RF Frequency at [Tune Mode](#). This RF Frequency Limits must not be the same as the [Band Frequency](#) range.
- The **Environment Scan data** for the Selected Device Marker is shown in green and red (all others are gray). The green portions of the environment scan data are portions which are under the squelch level of the Selected Device Marker which means that these RF frequency portions are right for setting there the RF frequency of the AKG Device.

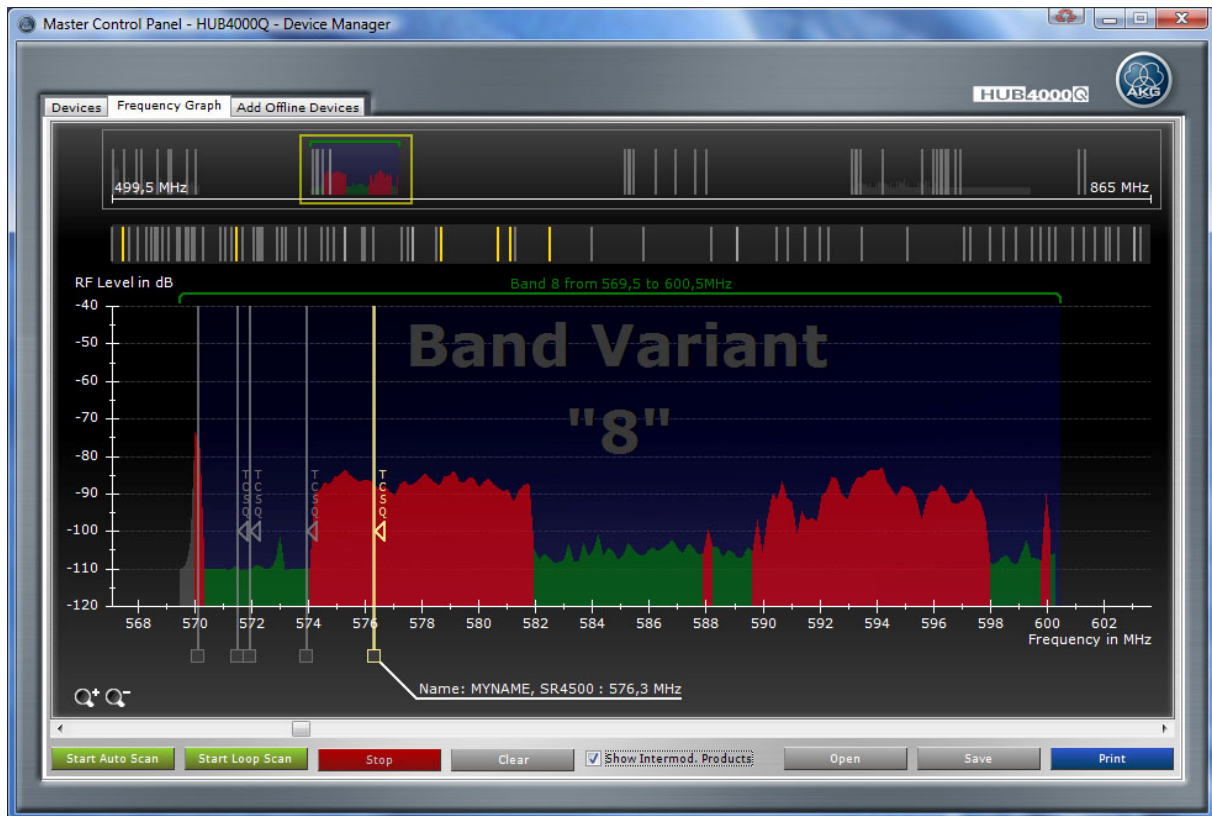
The orange line shows the maximum value of the scanned data. This is important for [Loop Scan](#) where the orange line shows the maximum value at each RF frequency which was measured while Loop Scan was running.

If the portion is red than there is a higher noise floor than the [Squelch level](#) of the Selected Device Marker. The user shouldn't set AKG Devices RF frequency inside these portions.

- **Navigation Graph:** The Navigation Graph always shows the entire RF frequency spectrum of the wireless system. Device Markers are also displayed and environment scan data as well. At a glance the user knows instantly which selected Region he is looking at and it is easy to navigate through the entire RF frequency spectrum with zooming in and out and scrolling through the RF frequency spectrum.

With clicking into the Navigation Graph the Selected Region at the Selected Region Graph will be changed.

- **Zoom Region:** The Zoom Region indicates which region of the RF frequency spectrum is currently shown at the **Selected Region Graph**. The yellow rectangle indicates the Zoom Region.
- **Zoom Icons:** With the two Zoom Icons on the lower left part of the Frequency Graph the user is able to Zoom In and Out of the full RF frequency space of the wireless system.
- **Environment Scan:** Scans the [RF environment](#) and the Environment Scan data is shown at the Frequency Graph. As long as no scan is conducted or started or scan data is loaded no scan data is shown at the Frequency Graph. If there is scan data available, either because of an [Environment Scan](#) is running or finished or scan data was loaded, the environment scan data is shown at the Frequency Graph.
  - **Start Button:** Starts the Environment Scan
  - **Stop Button:** Stops the Environment Scan
  - **Clear Button:** Clears the Environment Scan data
  - **Loop Scan Active Check Box:** If checked, [Loop Scan](#) is done. If not checked [Auto Scan](#) is performed if user starts Environment Scan.
  - **Open Button:** Opens a File Open Dialog to open previously saved Environment Scan data.
  - **Save Button:** Opens a File Save Dialog to save Environment Scan data.
  - **Print Button:** Opens a Print Dialog for printing the Environment Scan data.
- **Show Intermod. Products Check Box:** If checked the Frequency Graph shows the Intermodulation Products of the actual RF settings of the wireless system. The Intermodulation Products are shown between the **Navigation Graph** and the **Selected Region Graph**. The yellow vertical lines are the Intermodulation Products of the **Selected Device Marker** and all other **Device Markers**. The gray vertical lines are the Intermodulation Products of all other **Device Markers**.



**Figure:** Device Manager - Frequency Graph showing Intermodulation Products

### Add Offline Devices - HUB 4000 Q

At the Add Offline Devices tab page the user can add and configure [offline AKG Devices](#) at offline HUB 4000 Qs.

To add offline AKG Devices to an offline HUB 4000 Q the user must set the Device Type and the Band Variant for an offline AKG Device at an empty Slot of the HUB 4000 Q. With the **RESET ROW SETTINGS Button** the settings of a row can be discarded.

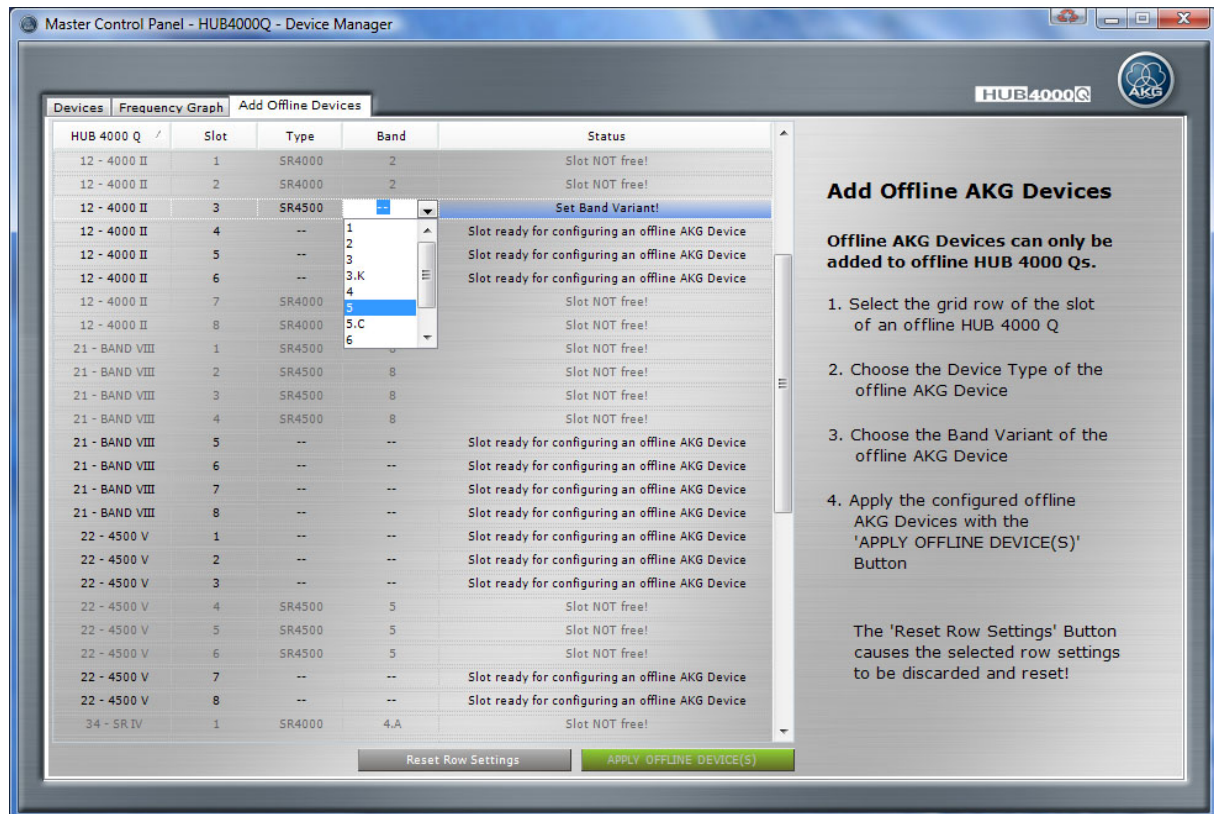
As long as at least one grid rows is not fully filled out and the **APPLY OFFLINE DEVICE(S) Button** is not pressed the offline AKG Devices will not be added and applied to the dedicated HUB 4000 Q.

So first the grid row must be filled out. Following parameters must be set:

- Select the grid Row of the slot of an offline HUB 4000 Q
- The Device Type of the AKG Device (SR 4000/4500, SST 4).
- The [Band Variant](#) of the AKG Device.

After all these parameters are set, the offline AKG Devices is configured and can be added or applied to the wireless system with the **APPLY OFFLINE DEVICE(S) Button**. Only grid rows of free slots of offline HUB 4000 Qs are enabled. All slots which cannot be configured are not enabled.





**Figure:** Device Manager - Add Offline Devices Grid

- **Add Offline Devices Grid:**
  - **HUB 4000 QNode Name:** Address and name of the HUB 4000 Q the offline AKG Device should be dedicated to (can't be changed within the grid).
  - **Slot:** Slot number of the HUB 4000 Q to which the offline AKG Device should be dedicated (can't be changed within the grid).
  - **Type:** AKG Device Type e.g. SR 4000/4500, SST 4... of the offline AKG Device to add. With a click in the cell the user can select the Device Type from a drop down list box.
  - **Band Variant:** [Band variant](#) of the AKG Device. With a click in the cell the user can select the Band Variant of the AKG Device from a drop down list box.
- **Reset Row Settings Button:** Discards the settings of the grid row.
- **Apply Offline Device(s) Button:** If this button is pressed, and all offline AKG Devices which were configured are configured right, then these offline AKG Devices are added to the selected HUB 4000 Qs. If there are any AKG Devices configured improperly, a message box with an error message will pop up.

## AUTO SETUP

### General Auto Setup - HUB 4000 Q



The Auto Setup is setting up the Frequency Management for the wireless system.

The AKG Auto Setup is based on the [RF Presets](#) of the connected AKG Devices. User must first specify which devices should be used for Auto Setup and which country of the RF Presets should be used. Auto Setup then performs an [Environment Scan](#) to check the RF environment. Then the Auto Setup algorithm searches the best RF Preset for the scanned [RF environment](#).

At the end the user can program all used AKG Devices to the found RF Presets of the Auto Setup.

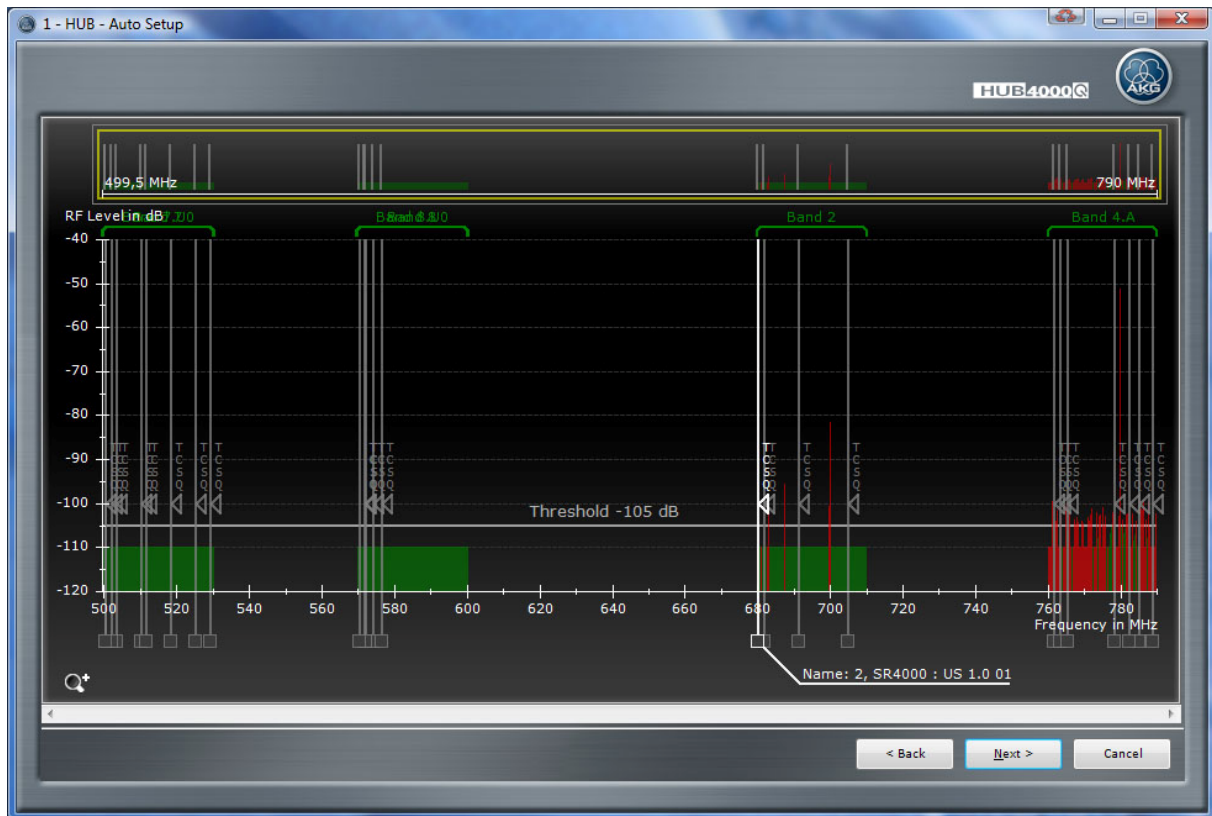
**IMPORTANT:** Auto Setup is performed for each [Frequency Band](#) separately. As an Environment Scan must be performed to be able to find RF Presets there must exist at least one SR 4x00 at each Frequency Band, which performs the Environment Scan. Auto Setup can't be performed for Frequency Bands at which no SR 4x00 is available.

**NECESSARY PREPARATIONS:** To perform an Auto Setup several preparations must be done:

- Scan Devices: At each Band Variant where an Auto Setup should be performed, **at least one Scan Device (SR 4x00)** must be available for performing an [Environment Scan](#)
- **Switch OFF** all transmitters of WMS 4x00 (HT / PT 4x00)
- **Switch ON** all other wireless devices (at their desired RF frequency) which may produce RF signals
- Start the Auto Setup

Three steps must be done:

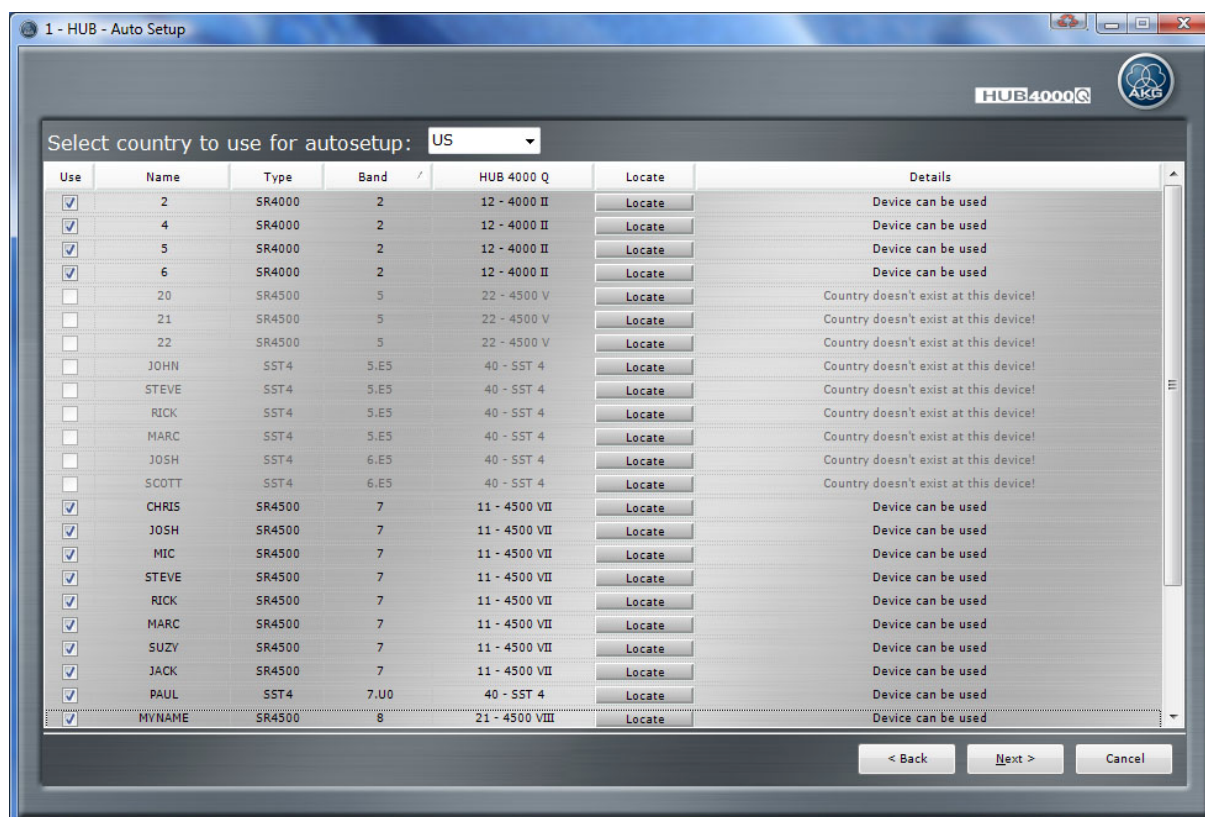
1. [Devices Grid](#): Here the user must specify the Country of the RF Preset which should be used to perform Auto Setup and the AKG Devices which should be used.
2. [Environment Scan](#): After that, an Environment Scan is performed to scan the RF environment.
3. [Result Grid](#): Gives an overview of the RF Presets settings that were found as a result of the Environment Scan.



**Figure:** Auto Setup Wizard - Frequency Scan Page - Results

## Devices Grid - HUB 4000 Q

At the Devices Grid, the user must specify the Country of the RF Preset for which the Auto Setup should be performed with the Country To Use Combo Box and the AKG Devices which should be used. All grid rows of AKG Devices which can't be used for the Auto Setup because the selected Country doesn't exist for that AKG Device are disabled and can't be used for the Auto Setup.



**Figure:** Auto Setup Wizard - Device Grid Page

- Devices Grid:** This Grid shows all devices which are connected to the wireless system. User must select a country at the Select Country To Use Combo Box for which the Auto Setup should be performed. If that country doesn't exist in any AKG Device it can't be selected at the Use Check Box. If there is no AKG Device at one Band which is able to perform an environment scan (SR 4x00) than all AKG Devices at this Band can't be used for the Auto Setup because Auto Setup needs the environment scan data to find preset for the AKG Devices.
  - Use:** If checked, this AKG Device is used for the Auto Setup and a [RF Preset](#) setting is searched for this AKG Device.
  - Name:** Name of the AKG Device.
  - Type:** Device Type of the AKG Device (SR 4000/4500, SST 4).
  - Band Variant:** [Band Variant](#) of the AKG Device.
  - HUB 4000 Q:** Address and name of the HUB 4000 Q to which this AKG Device is connected.
  - Locate Button:** Button to locate the AKG Device.
  - Details:** Additional information
- Country To Use Combo Box:** Let's the user choose a country for the Auto Setup. By default the first country of the combo box list is chosen.

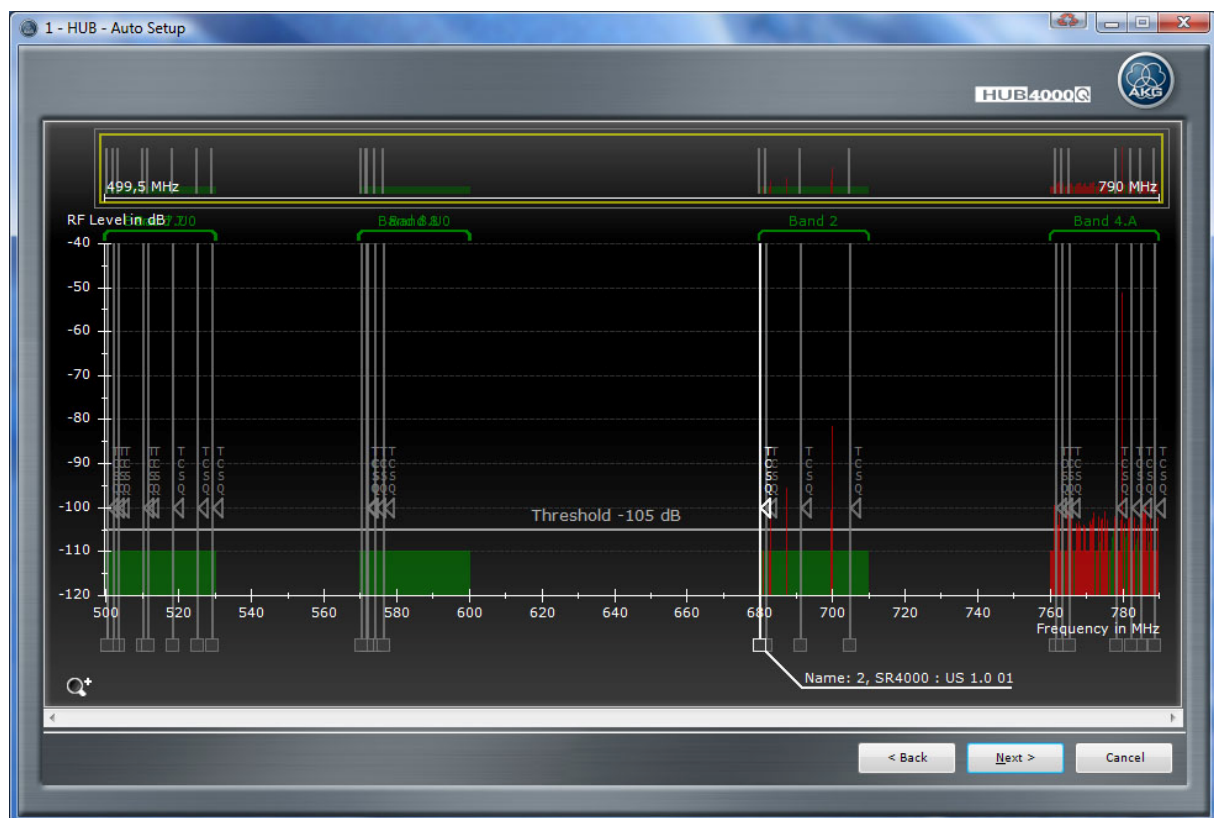
- **Back Button:** Switches to the previous wizard page (Info Page)
- **Next Button:** Switches to the next wizard page ([Environment Scan Page](#))
- **Cancel Button:** Closes Auto Setup wizard and discards all settings.

## Environment Scan - HUB 4000 Q

The second step of the Auto Setup performs an Environment Scan at all [Frequency Bands](#) of all AKG Devices, which should be used at Auto Setup. After [Environment Scan](#) is finished, the Auto Setup tries to find a free RF Preset at the selected country.

If there are any SST 4s at a band then first the SST 4s are set to the found RF Presets, and the RF Power is turned on. After that this band is scanned again and after the Environment Scan finished the Auto Setup searches for free RF Presets (discrete frequencies) for the SR 4x00. The SST 4s are reset to their original values.

The RF Presets which are found are shown as Device Markers to give the user graphic feedback of the found solution.



**Figure:** Auto Setup Wizard - Frequency Scan Page - Results - Found RF Preset settings

- **Frequency Graph:** Shows the environment scan data.
  - **Device Marker:** Device Markers are set to all RF Presets which have been found by the Auto Setup after the environment scan has finished.
  - **Zoom Region:** Shows the currently selected RF frequency region.

- **Zoom Icons:** With the two Zoom Icons the user can zoom in and out to get a more detailed view of the RF environment.
- **Back Button:** Switches to the previous wizard page ([Used Devices Page](#))
- **Next Button:** Switches to the next wizard page ([Results Page](#))
- **Cancel Button:** Closes Auto Setup wizard and discards all settings.

## Result Grid - HUB 4000 Q

The RF Preset settings which were found as a result of the Auto Setup are shown at a grid.

### HOW AUTO SETUP works:

The Auto Setup algorithm tries to find RF Preset settings for all AKG Devices at each Band Variant which are Intermodulation FREE. For that reason, the existing internal RF Presets of the AKG Devices are used. This means that Auto Setup uses one RF Preset Group which has enough free channels for all AKG Devices at one Band Variant.

**Example 1:** If, for example, 7 SR 4500s exist at the [Band Variant '7'](#) ([Country US](#) was chosen) the Auto Setup searches for a [RF Preset Group '1.0'](#) (within [Country US](#)) which has **7** free [RF Preset Channels](#) at the scanned [RF environment](#) (which has been scanned with [Environment Scan](#)). For all SR 4500 RF Presets settings at [Preset Mode](#) were found.

**Example 2 (see Figure: Auto Setup Wizard - Results Grid):** If, for example, 8 SR 4500s and 1 SST 4 exist at the [Band Variant '7'](#) ([Country US](#) was chosen) the Auto Setup searches for a [RF Preset Group '1.0'](#) (within [Country US](#)) which has **9** free [RF Preset Channels](#) at the scanned [RF environment](#) (which has been scanned with [Environment Scan](#)). The solution could look like the following screen shot. For the SST 4 RF Presets settings at [Preset Mode](#) were found. For the SR 4500s the RF Preset of the SST 4 is used. But as the SR 4500 have not stored the SST 4 RF Presets internally the SR 4500s RF Preset settings are set to [Tune Mode](#).

SST 4 ('PAUL', Band 7.U0) is set to SST 4 RF Preset **500,1 MHz** - '**US 7.A 01**'.

SR 4500 ('CHRIS', Band 7) is set to Frequency **503,9 MHz** (which equals SST 4 RF Preset '**US 7.A 02**').

SR 4500 ('JOSH', Band 7) is set to Frequency **506,3 MHz** (which equals SST 4 RF Preset '**US 7.A 03**')

SR 4500 ('MIC', Band 7) is set to Frequency **508,1 MHz** (which equals SST 4 RF Preset '**US 7.A 04**')

and so on...



Name	Type	Band	HUB 4000 Q	Locate	Country	Group	Channel	Frequency	Details
2	SR4000	2	12 - 4000 II	Locate	US	1.0	02	681.25	Device can be used
4	SR4000	2	12 - 4000 II	Locate	US	1.0	03	681.65	Device can be used
5	SR4000	2	12 - 4000 II	Locate	US	1.0	04	683.05	Device can be used
6	SR4000	2	12 - 4000 II	Locate	US	1.0	05	691.05	Device can be used
20	SR4500	5	22 - 4500 V	Locate	--	--	--	0	Country doesn't exist at this device!
21	SR4500	5	22 - 4500 V	Locate	--	--	--	0	Country doesn't exist at this device!
22	SR4500	5	22 - 4500 V	Locate	--	--	--	0	Country doesn't exist at this device!
JOHN	SST4	5.E5	40 - SST 4	Locate	AT	5.A	01	790.1	Country doesn't exist at this device!
STEVE	SST4	5.E5	40 - SST 4	Locate	AT	5.A	02	793.9	Country doesn't exist at this device!
RICK	SST4	5.E5	40 - SST 4	Locate	AT	5.A	03	796.3	Country doesn't exist at this device!
MARC	SST4	5.E5	40 - SST 4	Locate	AT	5.A	04	798.1	Country doesn't exist at this device!
JOSH	SST4	6.E5	40 - SST 4	Locate	--	--	--	0	Country doesn't exist at this device!
SCOTT	SST4	6.E5	40 - SST 4	Locate	--	--	--	0	Country doesn't exist at this device!
CHRIS	SR4500	7	11 - 4500 VII	Locate	--	--	--	503.9	Device can be used
JOSH	SR4500	7	11 - 4500 VII	Locate	--	--	--	506.3	Device can be used
MIC	SR4500	7	11 - 4500 VII	Locate	--	--	--	508.1	Device can be used
STEVE	SR4500	7	11 - 4500 VII	Locate	--	--	--	515.5	Device can be used
RICK	SR4500	7	11 - 4500 VII	Locate	--	--	--	520.3	Device can be used
MARC	SR4500	7	11 - 4500 VII	Locate	--	--	--	525.9	Device can be used
SUZY	SR4500	7	11 - 4500 VII	Locate	--	--	--	528.9	Device can be used
JACK	SR4500	7	11 - 4500 VII	Locate	--	--	--	519.5	Device can be used
PAUL	SST4	7.U0	40 - SST 4	Locate	US	7.A	01	500.1	Device can be used
MYNAME	SR4500	8	21 - 4500 VIII	Locate	--	--	--	573.9	Device can be used
MYNAME	SR4500	8	21 - 4500 VIII	Locate	--	--	--	576.3	Device can be used
18	SR4500	8	21 - 4500 VIII	Locate	--	--	--	578.1	Device can be used

**Figure:** Auto Setup Wizard - Results Grid

- **Result Grid:** This grid shows the RF Presets which have been found for all AKG Devices for which the Auto Setup has been conducted.
  - **Name:** Name of the AKG Device.
  - **Type:** Device Type of the AKG Device.
  - **Band:** Band Variant of the AKG Device.
  - **HUB 4000 Q:** Address and name of the HUB 4000 Q to which this AKG Device is connected.
  - **Locate Button:** Button to locate the AKG Device.
  - **Country:** Country of the found RF Preset setting
  - **Group:** Group of the found RF Preset setting
  - **Channel:** Channel of the found RF Preset setting
  - **Frequency:** Frequency of the found RF Preset setting
  - **Details:** Additional information
- **Back Button:** Switches back to the previous wizard page ([Environment Scan Page](#))
- **Finish Button:** Sends all found RF Preset settings of all AKG Devices down to the AKG Devices.



- **Finish & Print Settings Button:** Sends all found RF Preset settings of all AKG Devices down to the AKG Devices. And prints the found RF Preset settings at the users default web browser, where the found settings can be printed.

**IMPORTANT:** To program the found RF Presets to the AKG Devices the 'Finish & Print Frequencies' Button or the 'Finish' Button must be clicked!

## RF MONITOR - HUB 4000 Q

The RF Monitor (Radio Frequency Monitor) gives detailed information about the RF connection of SR 4x00s. It is only available for SR 4x00s. If there is no SR 4x00 at your wireless system then you can't open the RF Monitor.

The user can open just one RF Monitor at once and can monitor one SR 4x00 at once. RF Monitor can only be opened if at least one node is online at users wireless system.



**Figure:** RF Monitor

- **Select HUB 4000 Q:** The user can choose the HUB 4000 Q of which he wants to monitor SR 4x00s. By default the first HUB 4000 Q is chosen. With the arrows the user can switch to the next or previous HUB 4000 Q. If there is just one HUB 4000 Q than the user can't choose the node.
- **Select AKG Device:** The user can choose the AKG Device (SR 4x00) that he wants to monitor. By default the first SR 4x000 is chosen. With the arrows the user can switch to the next or previous SR 4x00. If there is just one SR 4x00 than the user can't choose the SR 4x00.

- **RF Low LED:** The RF Low LED above the RF Level Meter will remain lit permanently red if the SR 4x00 detects RF Low and shows "**RF Low**" at its display. That means that the RF level dropped below the squelch level.

User can reset the RF Low LED and the warning state at the SR 4x00 with the **Clear Button** or the at the physical device itself. There are separate RF Low LEDs for both antennas.

- **RF Level Meter:** Indicates the strength of the transmitter RF signal. As long as the RF level exceeds the selected [Squelch Level](#) (or threshold), the RF level meter will remain blue.

If the RF level drops below the squelch level, the upper part of the RF Level Meter will turn red for approx. three seconds indicating that the RF level was under the squelch level. The lower part of the RF Level Meter indicates always the RF level and is shown blue. If there was once a transmitter linked to the SR 4x00, meaning that the SR 4x00 has received a valid RF Signal at its selected RF Frequency, and the transmitter is then turned off the SR 4x00 will show "**TX OFF**" on its display. To indicate that state that the SR 4x00 lost the link to the transmitter the RF Level Meter shows "**TX OFF**" in red.

There is a separate **RF Level Meter** for both antennas.

- **Squelch Arrow:** The Squelch Arrows beside the two RF Level Meters are indicating the current [Squelch](#) setting (They are always the same because there is only one squelch setting for one SR 4x00). If the SR 4x00 uses [Tone Code Squelch](#) (TCSQ) the Squelch Arrow will not be displayed and instead "**TCSQ**" is displayed. With a right-click on the Squelch Arrow control a context menu is opened where the user can set the Squelch. If the user selects a Squelch Level from -80dB to -100db the Squelch is set to this level and Tone Code Squelch is not used. If the user selects "**TCSQ**" then Tone Code Squelch is used.
- **Antenna Active A LED:** This LED will be yellow if the antenna A is active and the RF signal of antenna A is currently used. There is only one antenna active at one time.
- **Antenna Active B LED:** This LED will be yellow if the antenna B is active and the RF signal of antenna B is currently used. There is only one antenna active at one time.
- **Diversity Error LED:** This LED turns red if SR 4x00 detects a Diversity Error. The user can reset the Diversity Error LED and the warning state at the chosen SR 4x00 with the **Clear Button** or the at the physical device itself.
- **Clear Button:** User can reset the RF Low LED, the AF Clip LED and the warning state at the SR 4x00 with a click on the Clear Button. All warnings at the SR 4x00 will be cleared except the TX OFF warning. This is only supported for SR 4x00 Firmware Version 1.22 and higher ([Unsupported Features](#))!
- **Rehearsal Graph:** The Rehearsal Graph shows the RF antenna levels over time. It records the levels of the last 5 minutes. The user can start and stop the recording of the levels, zoom in and out, scroll through the recorded values.

- **Start Button:** If clicked the Rehearsal Graph will start recording the both antenna levels over time.
- **Stop Button:** If clicked the Rehearsal Graph will stop recording the both antenna levels over time.

## COUNTRY SELECTION - HUB 4000 Q

The Country Selection is only available at SST 4. If the SST 4 is at the Country Selection mode, the user must select a country for that SST 4. A SST 4 can't be running without a selected country. **This is important for the [AKG Frequency Management](#).**

If the Product Panel or a Master Control Panel of some HUB 4000 Qs is opened and at least one of the attached SST 4s is at the Country Selection mode, then the Country Selection Form is automatically opened. Before the user has chosen a country for all SST 4s, the Product Panel and the Master Control Panel are disabled and locked.

There are two ways of choosing a country for a SST 4 if the Country Selection Form is opened:

- **The Country is selected separately for each SST 4.**

The user has to step through all SST 4s with the Next and Previous Device Buttons and has to select a country for the selected SST 4 with the Select Country combo box. After user has chosen a country for all SST 4s user can program all countries with a click on the Finish Button, which will be displayed at the last SST 4 page.



**Figure:** Country Selection Dialog - Single AKG Device

- **The Country is selected for all SST 4s at once.**

This is only possible if there is at least one country which is available at all SST 4s which are currently at a Country Selection mode, that's indicated if the Use country for all devices check box is enabled. If the Use country for all devices check box is disabled then there is no country which is available at all SST 4s and the SST 4s must be configured separately.

- **AKG Device:** Name of the actually chosen AKG Device

(Not shown if **Use country for all devices** check box is checked).

- **Band Variant:** [Band Variant](#) of the actually chosen AKG Device.

(Not shown if **Use country for all devices** check box is checked).

- **HUB 4000 Q:** Address and name of the HUB 4000 Q that is connected (Not shown if the **Use country for all devices** check box is checked).
- **Locate Button:** [Locates](#) the chosen AKG Device. (Not shown if the **Use country for all devices** check box is checked).
- **Select Country Combo Box:** Combo box which holds all countries for the chosen AKG Device if the **Use country for all devices** check box is NOT checked and all SST 4s should be configured separately.

If the **Use country for all devices check box** is checked and all SST 4s should be configured at once the **Select Country Combo box** holds all countries which are available at all SST 4s.

By default the first country is always selected at the Combo box list.

- **Use country for all Devices Check Box:** This Check box is only enabled if there is at least one country which is available at all SST 4s which are currently at Country Selection mode. If the **Use country for all devices** check box is checked then all SST 4s should be configured with the selected country at the **Select Country Combo box**. If it's not checked then all SST 4s should be configured separately.
- **Previous Button:** Switch to the previous SST 4. (Not shown if the **Use country for all devices** check box is checked).
- **Next Button:** Switch to the next SST 4. (Not shown if **Use country for all devices** check box is checked).
- **Finish Button:** Finish the Country Selection Form and program all SST 4s to the chosen country.

## ABOUT DIALOG - HUB 4000 Q

The About Dialog gives the user additional information about the System Architect software plug-in of the HUB 4000 Q.



**Figure:** About Dialog

- **Internet Link:** An internet link to the AKG homepage ([www.akg.com/hignet](http://www.akg.com/hignet)). If the user presses that link the AKG homepage will be opened at the users default internet browser if an internet connection is open.
- **OK Button:** If pressed the Device Info Dialog will be closed.

## DEVICE INFO DIALOG - HUB 4000 Q

The Device Info Dialog gives the user additional information about the connected HUB 4000 Qs which are not shown anywhere else at the plug-in.



**Figure: Device Info Dialog**

- **Device Info:** Gives the user detailed information about the connected HUB 4000 Qs.
- **Internet Link:** Internet link to the AKG homepage ([www.akg.com/hignet](http://www.akg.com/hignet)). If user presses that link the AKG homepage will be opened at the users default internet browser if an internet connection is open.
- **OK Button:** If pressed the Device Info Dialog will be closed.

**SAVING & LOADING - HUB 4000 Q**

- **HUB 4000 Q:**

A saved HUB 4000 Q Device File will have the extension  
**FileName.HUB4000Q.Device**

- **AKG Device:**

- **SR 4000:**

A saved SR 4000 AKG Device File will have the extension  
**FileName.SR4000.Device**

- **SR 4500:**

A saved SR 4500 AKG Device File will have the extension  
**FileName.SR4500.Device**

- **SST 4:**

A saved SST 4 AKG Device File will have the extension  
**FileName.SST4.Device**

**LOCATE - HUB 4000 Q**

With the locate functionality the dedicated AKG device of a Stripe or the AKG Devices of a HUB 4000 Q can be easily found. It's an important tool for keeping the overview over the wireless system and for finding devices in you rack as well as for troubleshooting.

**HUB 4000 Q - Locate**

**Hardware:** If an AKG Device is located, the background of the hardware AKG Device and the dedicated slot LED at the HUB 4000 Q will start to blink periodically. All connected AKG Devices are located (See next chapter **AKG DEVICE - LOCATE**).

**Plug-in:** At the [Help Menu](#) the **Locate On** item is checked to indicate that the HUB 4000 Q is located. And the Venue View icon of the HUB 4000 Q is surrounded by a blue rectangle.

The HUB 4000 Q can be located from several points of System Architect.



- With a right-click at the HUB 4000 Q icon at the venue view and selecting **Locate On** or **Locate Off**
- At the [Help Menu](#) of the Product or Master Control Panel of the HUB 4000 Q

## AKG Device - Locate

**Hardware:** If an AKG Device is located the background light of the hardware AKG Device and the dedicated slot LED at the dedicated HUB 4000 Q also starts to blink periodically.

**Plug-in:** The dedicated Stripe starts to change it's background periodically (See [Stripe located](#)).

An AKG Device can be located at various ways:

- With the [Default Context Menu](#) of the dedicated Stripe
- Selecting a Stripe and [pressing "L"](#)
- With Locate Buttons at [Device Manager](#), [Auto Setup](#), [Country Selection Dialog](#)

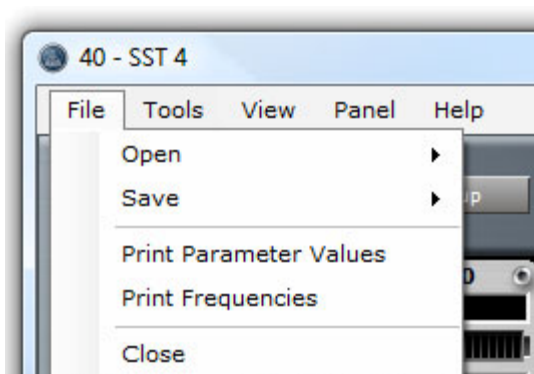
## MENUS - HUB 4000 Q

The menu bar on the Product Panel and the Master Control Panel has four menus that provide various functions.

The menus are:

- **File Menu**
- **Tools Menu**
- **View Menu**
- **Panel Menu**
- **Help Menu**

## File Menu



**Open** – Loads a device file for the HUB 4000 Q (at Master Control Panel for the actual selected HUB 4000 Q)

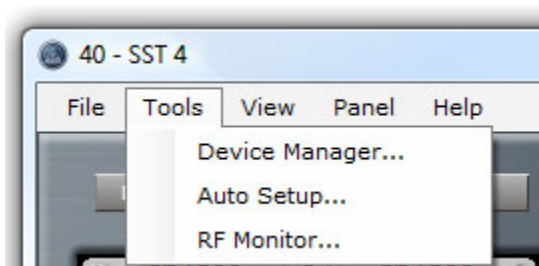
**Save** – Saves a device file HUB 4000 Q (at Master Control Panel for the actual selected HUB 4000 Q)

**Print Parameter Values** – Opens a browser window displaying all parameter values for the HUB 4000 Q (at Master Control Panel not available). This allows the printing of this information.

**Print Frequencies** – Opens a browser window displaying all RF frequency and RF Preset values for the HUB 4000 Q (at Master Control Panel for multiple HUB 4000 Qs). This allows printing of this information.

**Close** – Closes the Panel window

## Tools Menu

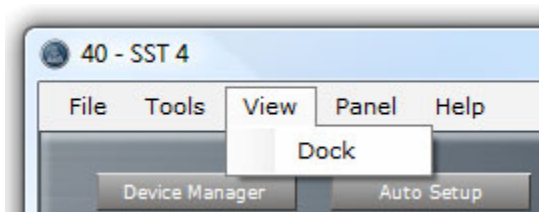


**Device Manager** – Opens the Device Manager

**RF Monitor** – Opens the RF Monitor

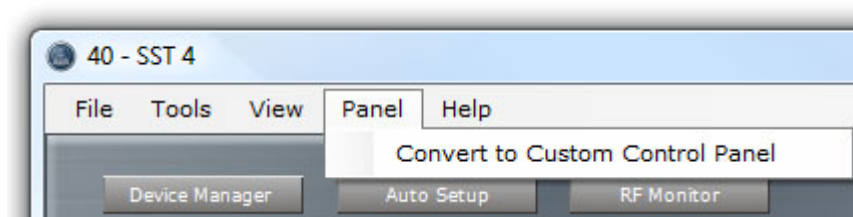
**Auto Setup** – Opens the Auto Setup

## View Menu



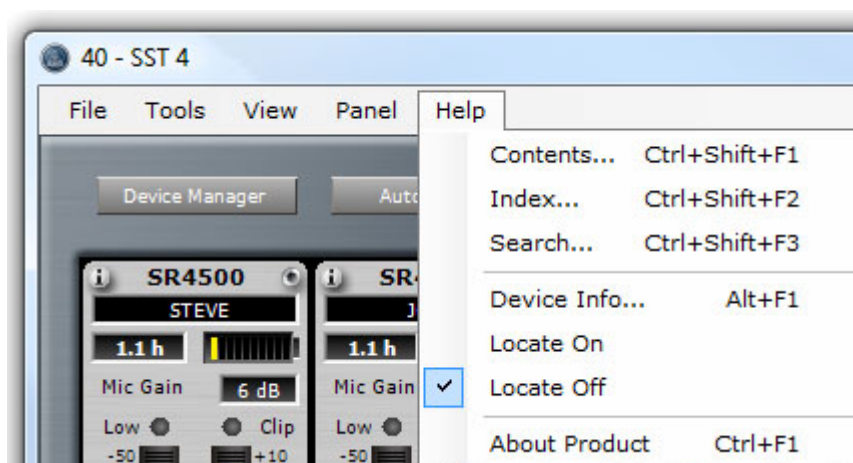
The View Menu lists the options for either docking or floating the Product or Master Control Panel.

## Panel Menu



The Panel Menu lists the option to Convert the Product Panel or Master Control Panel into a Custom Control Panel.

## Help Menu



The Help Menu contains links to the help file as well as utilities for gathering information about the HUB 4000 Q(s).

**Device Info** – Opens the Device Information Panel, which contains the IP Address, Firmware version, MAC Address, and additional information about the HUB 4000 Q. This information can be very helpful for technical support personnel when troubleshooting.

**Device Locate** – The Device Locate causes the HUB 4000 Q to either turn locating on or off.

**About** – Opens the About Panel of the HUB 4000 Q. This information can be very helpful for technical support personnel when troubleshooting.

## SHORT CUTS - HUB 4000 Q

This chapter gives an overview over the keyboard shortcuts which can be used at the AKG HiQnet plug-in.

### **Product Panel and Master Control Panel:**

- **L:** Locate the selected AKG Device and the dedicated stripe
- **O:** Switch the selected AKG Device and the dedicated stripe On / Off
- **M:** Mutes the selected AKG Device and the dedicated stripe (only for SR 4000)
- **Arrow Left:** Selects next left Stripe
- **Arrow Right:** Selects next right Stripe

### **Frequency Graph**

- **Ctrl (Strg) + Mouse Wheel:** Zoom in and out
- **Mouse Wheel:** Scroll through Frequency Range
- **Arrow Left:** Selects next left Device Marker
- **Arrow Right:** Selects next right Device Marker

### **UNSUPPORTED FEATURES - HUB 4000 Q**

This chapter explains which features are not supported at which firmware version of some AKG devices:

#### **SR 4000 - Firmware version 1.10:**

- No [Environment Scan](#) is possible
- [Clearing States](#) is not possible
- [Locate](#) is not possible

**IT IS RECOMMENDED TO UPDATE THE SR 4000 (Version 1.10) TO FIRMWAREVERSION 1.22**

Please contact [hqnet@akg.com](mailto:hqnet@akg.com) for further help

#### **SST 4 - Firmware version 3.30:**

- Switching the SST 4 On / Off is not possible
- Bypassing the [audio effects](#) is not possible
- Setting the [Low Cut Frequency](#) (audio effect) is not possible as well as turning Low Cut On or Off

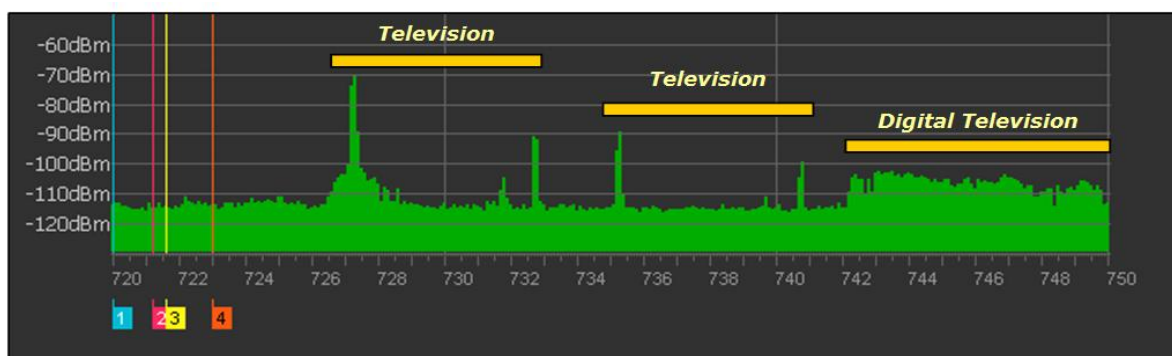
**These three unsupported SST 4 features will be supported with upcoming AKG HiQnet plug-in updates in autumn 2008!**

## AKG RF BASICS

### RF Environment:

Wireless Microphone and In Ear Monitoring Systems share their frequency range with other wireless transmission systems like TV stations, radio stations, mobile phones, walky talkies etc. Every wireless device has to operate on one specific RF frequency (RF carrier frequency) at which it receives and / or transmits RF signals. It is not allowed that a second device is working with the same RF frequency (RF carrier frequency). You have to take care that your chosen frequency is free of any interference like other wireless microphone systems and TV.

To find free RF frequency an [Environment Scan](#) or an [Auto Setup](#) can be performed with the [System Architect AKG plug-in](#).



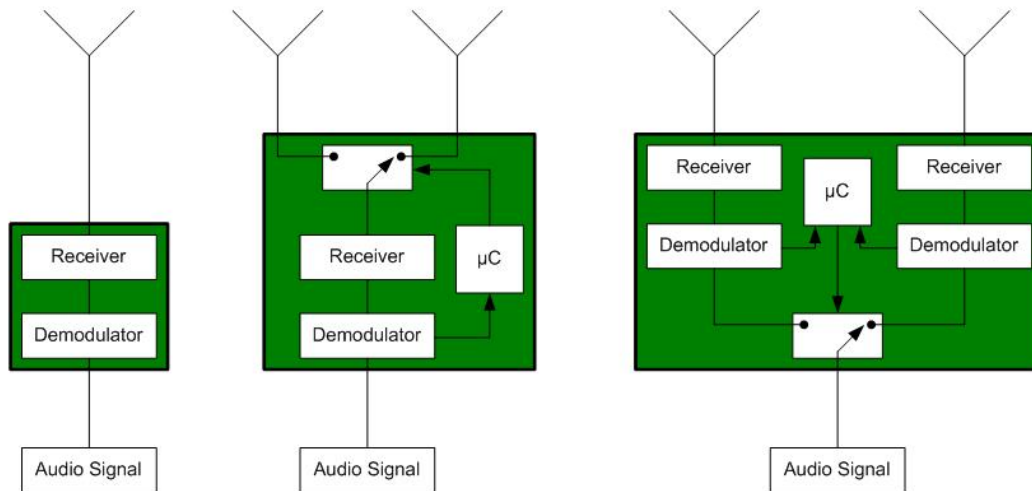
**Figure:** Example of an Environment Scan with several TV station's RF signals (Notice the sharp analog RF signals - "Television" and the broadband RF signal of "Digital Television")

### RF Frequency

Each wireless device uses a Carrier Frequency which is the RF Frequency. At Transmitter Devices (SST 4, HT / PT 4x00) that Carrier Frequency is modulated by the Modulate Signal and that RF signal is transmitted. At Receiver Devices (SR 4x00, SPR 4) the received RF Signal is demodulated by this RF Carrier Signal and the Modulated Signal is then used to get the Audio Signal.

### Diversity

Diversity is a reception technique that ensures clear reception of RF signals even in a difficult RF Environment. Diversity receivers use several antennas for the same carrier frequency and some models use several receiving sections, too. The most robust technique is the True Diversity System which is used at the SR 4x00.



**Figure:** Diversity Systems - Non Diversity / Four Level Antenna Diversity / True Diversity

## Squelch

Squelch is an electronic circuit that switches the receiver off when the received signal is too weak so the associated extraneous noise and the self-noise resulting from the receiver being switched off will be inaudible. The standard squelch threshold is usually user adjustable within a preset range and can be chosen for the SR 4x00 at the [Device Manager](#).

### Standard: Carrier Squelch or manual Squelch

Operates strictly on the signal strength of the signal. If the received signal strength drops under the adjustable squelch threshold then the audio output is muted. The Squelch Level can be set for the SR 4x00 at the [Device Manager](#).

### Advanced: Tone Code Squelch (TCSQ)

The audio is turned on only in the presence of the correct tone code (which is transmitted with the RF signal from the transmitter - HT / PT 4000/4500) and an adequate signal strength (-100dbm). The Tone Code Squelch locks out all RF signals except RF signals with the correct tone code. Meaning that Tone Code Squelch is more robust against RF noise signals which are at the same RF carrier frequency as the SR 4000/4500.

### Stationary Receiver - SR 4000/4500

The SR 4000/4500 is a high fidelity audio device that receives its input from an antenna, uses electronic filters to separate a wanted radio signal from all other signals picked up by this antenna and converts the signal through demodulation into an audio sound. It's a true diversity device and is integrated at the System Architect plug-in ([SR 4x00 Stripe](#)).

The previous version of the SR 4x00 series is the SR 4000:





**Figure:** SR 4000 - Stationary Receiver

The actual version of the SR 4x00 series is the SR 4500, which has an improved software, a new mechanical design, a brighter display and some other small improvements.

### **Stationary Transmitter - SST 4**

The SST4 is an electronic device that generates and amplifies a carrier wave, modulates it with a sound signal, and radiates the resulting signal from an antenna.



**Figure:** SST 4 - Stationary Stereo Transmitter

### **RF Output Power**

SST4 is the first In Ear Monitoring transmitter with an adjustable RF output power. If there are no government restrictions you can choose an RF power up to 100 mW.

The RF Power can be set for the SST 4 at the [Device Manager](#).

### **Intermodulation**

Intermodulation is caused by non-linear behavior of the amplifier being used at RF receivers and transmitters. If two or more signals are passed through the amplifier, additional Intermodulation products are formed, that fall in the used frequency range.

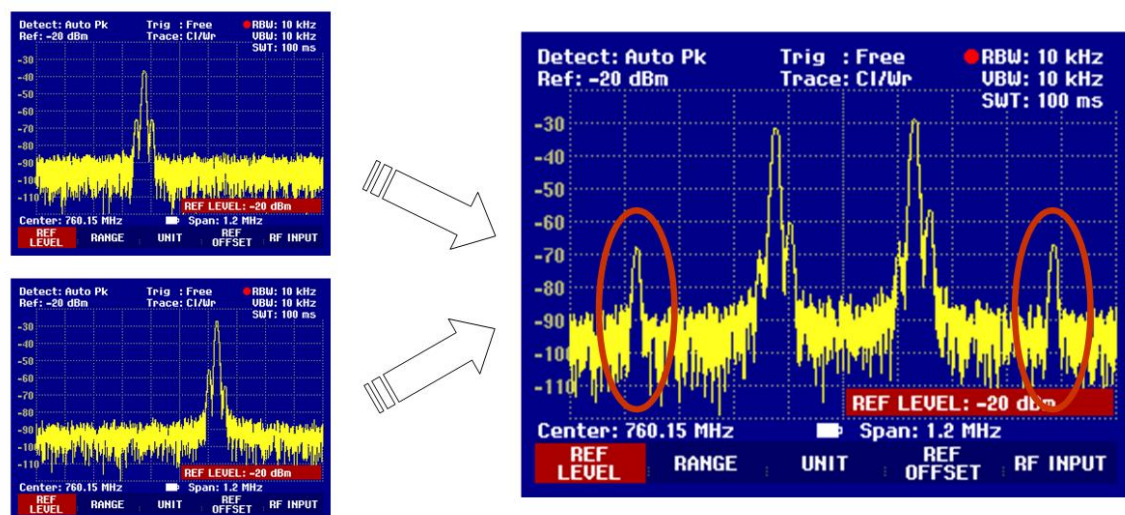
### 3<sup>rd</sup> order IMD:

$$F_{\text{IMD1}} = 2 \cdot f_1 - f_2$$

**Figure:** Formula for calculate the 3rd order intermodulation

The major problem are the 3rd order Intermodulation products. Intermodulation can occur on both, the transmitter as well as on the receiver side of the system. A strong Intermodulation product can open the squelch of a receiver that is tuned (RF carrier frequency is at the Intermodulation frequency) to the Intermodulation frequency. At the given example you see two carriers at the left side. If these two carriers are received at an amplifier of an receiver like the SR 4x00 then the Intermodulation causes two new frequencies which are marked RED at the right graphic.

To avoid problems the wireless devices must use Intermodulation free RF (carrier) frequencies. AKG uses already calculated [Frequency Presets](#) at its devices which ensures that the RF (carrier) frequencies are not set to Intermodulation products. With the [Auto Setup](#) of the AKG System Architect plug-in these RF Presets can be set automatically to set up the system.



**Figure:** 3rd order intermodulation (with 2 carriers)

## AKG FREQUENCY MANAGEMENT

### AKG Frequency Management

#### General

The AKG Frequency Management takes care of an easy setup of wireless systems.

## Frequency Band

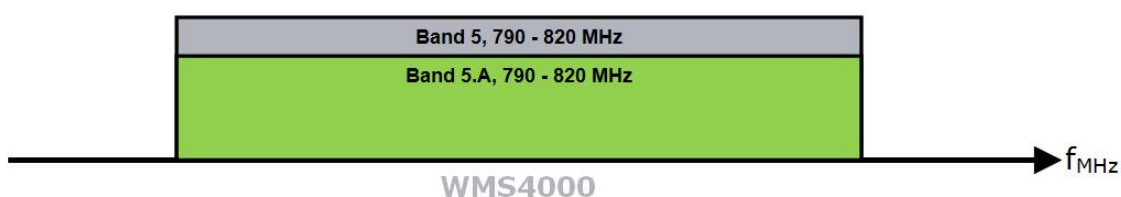
Each Wireless Device uses a Frequency Band which represents the devices hardware RF limits within it can receive (SR 4000/4500) or transmit (SST 4) RF signals. The Frequency Band is given for an AKG Device and can't be changed. AKG Devices are available with a wide range of different Frequency Bands. You can chose Frequency Bands from 500 MHz up to 862 MHz.



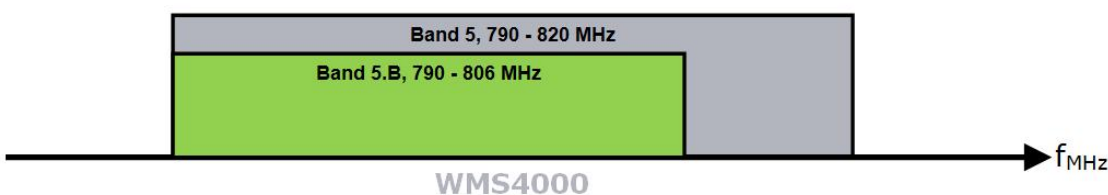
**Figure:** AKG Frequency Bands (schematic graphic)

## Band Variant

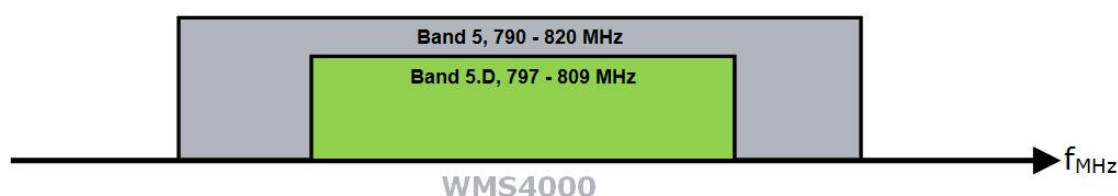
Each AKG Devices has its dedicated [Frequency Band](#). For some Countries the RF Frequency Range where wireless systems are allowed to transmit RF signals are restricted. The frequency range where the AKG device is allowed to transmit RF signal is called Band Variant. A Band Variant can be the same frequency range as the Frequency Band (see Figure 1) or can be a subrange of the Frequency Band because of frequency restrictions (see Figure 2 & 3).



**Figure 1:** Band Variant 5.A (schematic graphic)



**Figure 2:** Band Variant 5.B (schematic graphic)



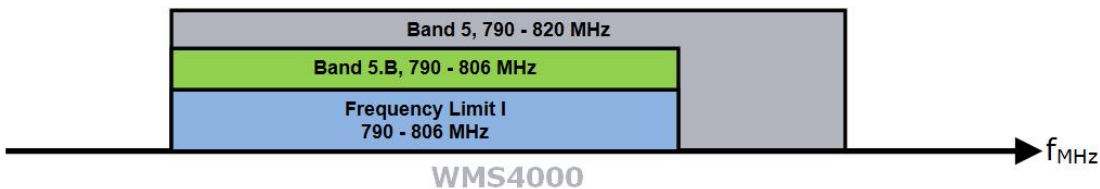
**Figure 3:** Band Variant 5.D (schematic graphic)

## Frequency Limits

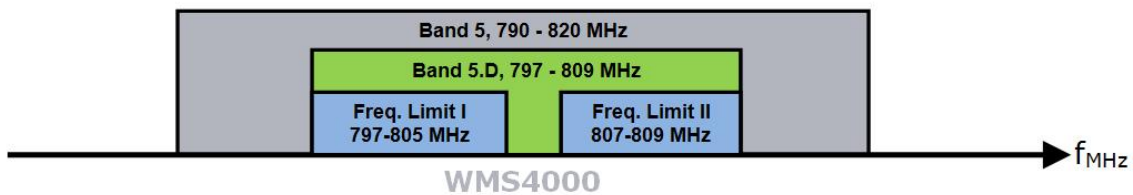
Each Band Variant contains at least one Frequency Limit or even multiple Frequency Limits. This means that the user can set [RF Frequencies](#) at a Band Variant only within these Frequency Limits. At [Frequency Graph](#) at Device Manager you can see this Frequency Limits for the Selected Device Marker.



**Figure:** Band Variant 5.A with one Frequency Limit (schematic graphic)



**Figure:** Band Variant 5.B with one Frequency Limit (schematic graphic)



**Figure:** Band Variant 5.D with two Frequency Limits (schematic graphic)

## RF Presets

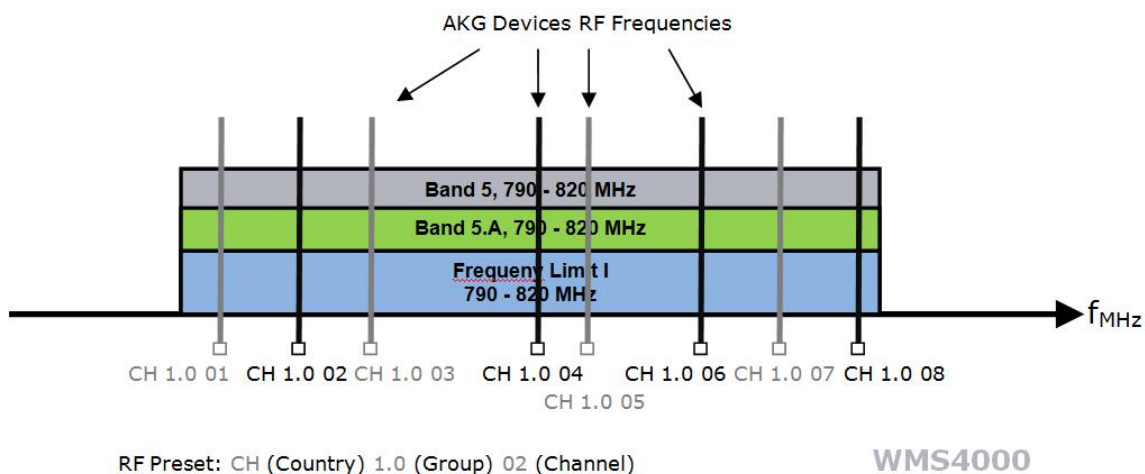
RF Presets are a group of calculated RF Frequencies which are [Intermodulation FREE](#) within one Frequency Band. The AKG RF Preset contains three selectable parameters:

- Country
- Group
- Channel

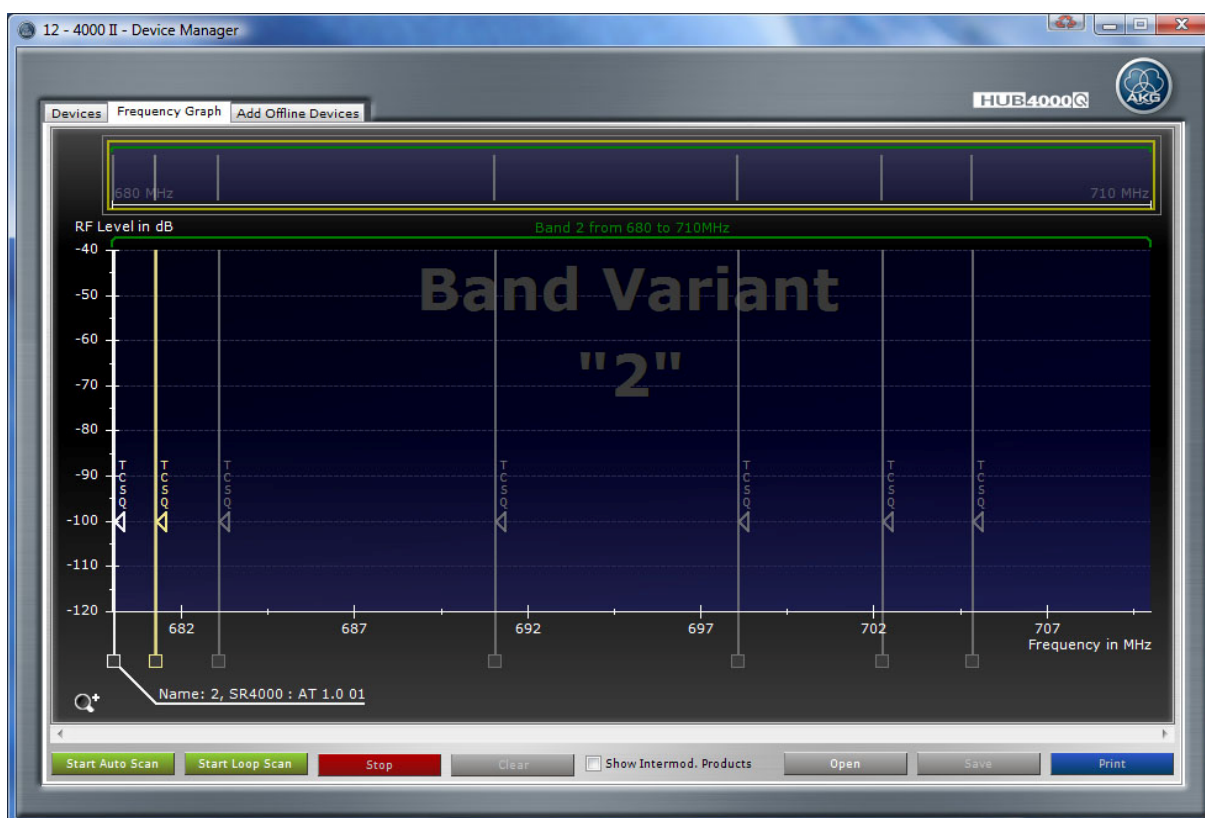
If a RF Preset is chosen either on the hardware device itself or at the AKG System Architect plug-in at the [Device Manager](#) then the AKG Device will automatically turn into [Preset Mode](#).

The user must keep in mind that AKG RF Presets are only Intermodulation FREE for AKG Devices which are at the same Frequency Band.

For manually setting up a wireless system the user chooses the same Country and Group at each AKG Device. Afterwards the user sets all AKG Devices to a different Channel. This ensures that AKG Devices which are at one Band Variant are Intermodulation FREE!



**Figure:** RF Preset Example for WMS 4000 (schematic graphic)



**Figure:** A RF Preset Example for WMS 4000 at the [Frequency Graph](#)



Name	Type	Band	HUB	Locate	Country	Group	Channel	Frequency	Options	State	Send To	Receive From	Loop Scan
1	SR4000	2	12 - 4000 II	Locate	US	1.0	2	681,250	TCSQ	ONLINE	Send To	Receive From	<input type="checkbox"/>
2	SR4000	2	12 - 4000 II	Locate	AT	1.0	1	680,050	TCSQ	ONLINE	Send To	Receive From	<input type="checkbox"/>
3	SR4000	2	12 - 4000 II	Locate	US	1.0	4	683,050	TCSQ	ONLINE	Send To	Receive From	<input type="checkbox"/>
4	SR4000	2	12 - 4000 II	Locate	AT	1.0	2	681,250	TCSQ	ONLINE	Send To	Receive From	<input type="checkbox"/>
5	SR4000	2	12 - 4000 II	Locate	AT	1.0	5	691,050	TCSQ	ONLINE	Send To	Receive From	<input type="checkbox"/>
6	SR4000	2	12 - 4000 II	Locate	AT	1.0	6	704,850	TCSQ	ONLINE	Send To	Receive From	<input type="checkbox"/>
7	SR4000	2	12 - 4000 II	Locate	US	1.0	8	698,050	TCSQ	ONLINE	Send To	Receive From	<input type="checkbox"/>
8	SR4000	2	12 - 4000 II	Locate	US	1.0	9	702,250	TCSQ	ONLINE	Send To	Receive From	<input type="checkbox"/>

**Figure:** A RF Preset Example for WMS 4000 at the [Device Grid](#)

## Preset vs. Tune Mode - AKG Frequency Management

There are two different modes at which AKG wireless system RF Frequency can be set. An AKG Device can be set either to the Tune or the Preset Mode. This Mode can be changed at the [Device Manager](#) of the AKG System Architect plug-in.

### Tune Mode

At the Tune Mode the user must set the RF (carrier) Frequency by hand to a discrete value within the [Frequency Band](#) of the AKG Device (SR 4000/4500, SST 4). As these RF Frequency can be set individually for each AKG Device at a wireless system it can't be guaranteed that the wireless will work without problems because one of the RF Frequency of one or several AKG Devices may be set to an [Intermodulation](#) product.

**For normal operation it is recommended to use Preset Mode!**

### Preset Mode

At the Preset Mode the AKG Device uses precalculated [RF Presets](#) from AKG which are stored at each AKG Device. That means that the user sets the RF Preset and then the AKG Device has stored a [RF Frequency](#) for this RF Preset. Normally the Preset Mode should be preferred because then the wireless system will not be running into problems cause of [Intermodulation](#).



# GLOSSARY

## B

**BP:** Battery Pack

## C

**CAT 5:** standard network cables

## H

**HT:** Handheld Transmitter

**HT 4000:** Handheld Transmitter of the AKG WMS 4000

**HT 4500:** Handheld Transmitter of the AKG WMS 4500

**HUB 4000 Q:** HiQnet Hub for connecting up to 8 AKG Devices (SR 4000, SST 4) to a HiQnet network

## I

**IVM 4:** Individual Virtual Monitoring - AKG Wireless monitoring system

## P

**PT:** Pocket Transmitter

**PT 4000:** Pocket Transmitter of the AKG WMS 4000

**PT 4500:** Pocket Transmitter of the AKG WMS 4500

## R

**RF:** Radio Frequency

**RJ 11:** Cables for connecting AKG Devices to a HUB 4000 Q

**RJ 45:** standard network cable connectors

**RPT:** Rest Play Time

## S

**Slot:** Slot of the HUB 4000 Q where user can connect AKG Devices with RJ 11 cables

**SR:** Stationary Receiver

**SR 4000:** Stationary Transmitter of the AKG WMS 4000

**SR 4500:** Stationary Transmitter of the AKG WMS 4500

**SST:** Stationary Stereo Transmitter

**SST 4:** Stationary Stereo Transmitter of the AKG IVM 4

**Stripe:** Software representation of AKG Devices at the System Architect AKG plug in

## **T**

**TCSQ:** Tone Code Squelch

## **W**

**Wireless system:** Multiple AKG Devices at one HUB 4000 Q (Product Panel) or at multiple AKG Devices at multiple HUB 4000 Qs (Master Control Panel)

**WMS:** Wireless Microphone System

**WMS 4000:** Wireless Microphone System 4000 of AKG

# INDEX

## A

About Dialog AKG .....56  
AKG .....1, 3, 5  
Auto Setup.....34, 44

## B

Band Variant.....63

## C

Country Selection .....54

## D

Device Info AKG .....57  
Device Manager .....30  
    Add Offline Devices .....42  
    Device Grid .....31  
    Environment Scan.....34  
    Frequency Graph .....38  
Diversity.....63  
    True Diversity .....63

## F

Frequency Band .....63  
Frequency Limits .....63  
Frequency Management.....67

## H

HUB 4000 Q .....3, 5

## I

Intermodulation.....63  
IVM .....25, 63  
    IVM 4.....25, 63

## L

Locate AKG .....58

## M

Menus AKG ..... 59  
Mismatch ..... 13

## P

Preset Mode ..... 72

## R

RF environment ..... 63  
RF Frequency ..... 63  
RF Monitor ..... 52  
RF Power.....25, 31, 63  
RF Preset ..... 63

## S

Squelch.....21, 31, 38, 63  
SR.....21, 63  
    SR 4000 .....21, 63  
    SR 4500 .....21, 63  
SST.....25, 63  
    SST 4 .....25, 63  
Stationary Receiver .....21, 63  
Stationary Transmitter .....25, 63  
Stripe .....16, 20, 21, 25

## T

Tone Code Squelch .....21, 31, 38, 63  
Tune Mode ..... 72

## W

WMS.....21, 63  
    WMS 4000 .....21, 63  
    WMS 4500 .....21, 63

